WIRE AND WIRE PRODUCTS

OCTOBER 1934

How a Little Knowledge Plus Much Curiosity Made a New Wire Annealing Process

ENGINEERS said it couldn't be done . . . but when we decided to find out for ourselves what would happen if a metal pot was used as one electrode for internally heating electrically a pot full of Lavite . . . WE STARTED SOMETHING.

TO THE utter confusion of our electrical friends, we found that neither the pot nor the work being heat treated short circuited the current . . . that the highest resistance was near the electrodes and the circulation of the liquid prevented local heating. When we learned that two electrodes of small dimensions or electrodes connected by a resistance coil could be used we realized an important discovery had been made. For here was a wonderfully flexible means of heating a bath which did not deteriorate and a pot that could be made practically indestructible. This was NEWS . . . BIG NEWS!

THESE discoveries brought revolutionary changes to the art and science of heat treating. In solving the problem of heating small pots to high speed steel hardening temperatures (2350 deg. F.) we learned how to heat larger pots to lower temperatures . . . and were soon building furnaces with pots over twenty feet long for heating tons of metal per hour using all the advantages of a liquid heating medium --Lavite-- that gave:

1. *More Uniform Heating than Any Other Method.*
2. *No Decarbonizing or other Surface Change.*
3. *Absolutely no Scaling or Oxidation.*
4. *Shortest Heat Treating Cycles.*
5. *Better Performing Product.*
6. *Less Installation Cost.*
7. *Lower Operating Cost.*

THE uniformity of heating and even distribution of heat in the bath provide intensive heating at a high capacity with no danger whatsoever of spoiling the work. With the factors of uniform controlled heating thus made available Bellis Furnaces, as one operator expressed it are "hogs for work."

THERE is no smoke, flame, fumes, excessive heat radiation or noise to fatigue the workmen.

ACCURATE and dependable temperature control from a single thermo-couple maintains the temperature of the bath to as close a degree as is possible with modern precise pyrometric equipment.

GREAT fuel advantage results from this method of internal heating because practically perfect insulation is possible to take full advantage of the thermos bottle or fireless cooker heat insulating principle.

Investigate the Application of This Furnace to Your Wire Annealing

BELLIS Electric Furnace

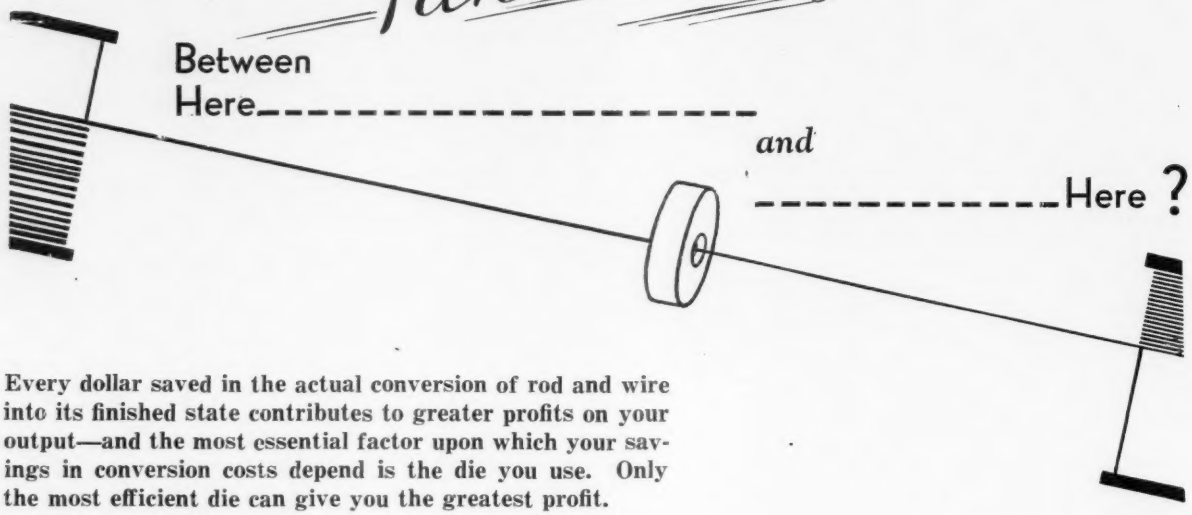
PATENTED AND PATENTS PENDING

THE BELLIS HEAT TREATING COMPANY, BRANFORD, CONNECTICUT

OFFICIAL PUBLICATION OF THE WIRE ASSOCIATION

How Many of Your Profit-Dollars

—Take Wings—



Every dollar saved in the actual conversion of rod and wire into its finished state contributes to greater profits on your output—and the most essential factor upon which your savings in conversion costs depend is the die you use. Only the most efficient die can give you the greatest profit.

When selecting the dies for your drawing and extrusion work, consider the fact that cemented carbide dies will give you a greater Yield Per Ton—more pounds and more feet of salable wire from any given ton—than any other type of die material. Closer tolerances, better quality and less scrap—all recognized advantages of Carboloy cemented carbide die use, make this possible.

And when considering cemented carbide dies, do not overlook one important factor: The strength of Carboloy cemented carbide permits the use of smaller, more economical nibs —a factor which enables you to hold to a minimum your initial and replacement die cost.

CARBOLOY COMPANY, INC.

Now in new and larger quarters at:

2985 E. Jefferson Ave., Detroit, Michigan

CHICAGO CLEVELAND NEWARK
PITTSBURGH PHILADELPHIA

The Mark of CARBOLOY

Due to the greater life of Carboloy dies, averaging over 2 years, many mills consider their original investment in Caboloy dies as a capital expenditure and write it off within one year. Current replacements are charged to operating costs.

CARBOLOY

REG. U. S. PAT. OFFICE

DRAWING AND EXTRUSION DIES - - - ALL TYPES OF CEMENTED CARBIDES

EFFICIENT-ECONOMICAL PICKLING

GRASSELLI 3

INHIBITOR

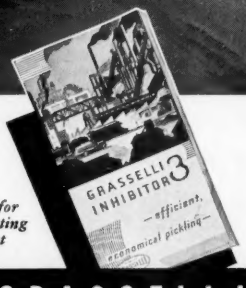
Guesswork is Costly

THERE IS NO GUESSWORK IN EFFICIENT, ECONOMICAL PICKLING

A GOOD inhibitor, coupled with good pickling practice takes the *guesswork* out of pickling.

Good pickling practice with the use of a good inhibitor insures a saving in acid, a saving in metal loss, an elimination of hydrogen embrittlement, a better finish and improved working conditions.

Grasselli 3 Powder Inhibitor properly used *ELIMINATES GUESSWORK* and assures efficient, economical pickling in your plant.



Write for Interesting Booklet

GRASSELLI STEEL SERVICE

Not a name, but a complete all-around laboratory and plant pickling service . . . maintained for the purpose of servicing our products and your problems. We ask you to make use of it.

THE GRASSELLI CHEMICAL CO., INC., Cleveland, Ohio

FOUNDED 1839 GRASSELLI REG. U.S. PAT. OFF.

GRASSELLI . . . THE ANSWER TO YOUR PICKLING PROBLEM

— DESCO —

A PICKLING STABILIZER ▲ ▲ ▲

FOR CARBON STEELS ▲ ▲ ▲

ROUND AND FLAT PRODUCTS ▲ ▲ ▲

▲ ▲ ▲

The strong passivating effect of this excellent inhibitor insures a bright finish and forms a sound basis for a bright drawing technique—

— FOR —

BARS
TUBES
SCREW STOCK
WELDING WIRE
COLD HEADING WIRE
WIRE FOR TINNING OR ELECTRO-PLATING

We Shall Exhibit At The National Metal Congress October 1-6, 1934,
Port Authority Bld'g., New York, N. Y.

DELANY CHEMICAL CO.

COTTMAN AND MILNOR STS.,
PHILADELPHIA, PA.

Registry of Used Wire Machinery

We Offer–Subject to Prior Sale–The Following Used Wire Mill Machinery

No. 237
Electric Resistance Pointers, Capacity .148

No. 282
Waterbury No. 1 Straight Roll Machines, With Spooling Attachment.

No. 302
9 Die Richards Continuous Machine For Copper Rod

Waterbury stand spooler for fine wire.

No. 321
Electric Platform Truck
Capacity 6000 lbs.
Platform 41″ x 82″ x 22½″ High
24 Cells Edison A-6 Batteries

No. 342
Nilson Power Press B 2

No. 348
Five-block rod bench with gear drive and motor, 26″ and 22″ blocks.

No. 400
Twenty head enameling machine complete, capacity down to .001.

No. 401
Eight head spooler, capacity 200 lb. spools, motor driven.

No. 402
Hayes electric furnaces, automatic control, with 32 head spooler, for fine wire.

No. 403
Waterbury straight roll fine wire machines, motor and belt drive.

No. 406
Die Reaming Lathe, Semi-automatic.

No. 408
Barron and Crowther 3 hole continuous wire machines, ranges from No. 5 rod to 21 gauge.

No. 409
Wire pointers for bench or post mounting, ¼ to No. 12.

No. 418
Five 4-penny nail machines (German design)

No. 432
24 block intermediate frame with 16″ blocks, reducer, and pulley drive.

No. 438
12 block fifteen frame without drive.

WE HAVE BUYERS FOR THE FOLLOWING

No. 360
Wanted
No. 1 Tor and No. 1 Universal and No. 3 Universal Sleeper & Hartley Coilers.

No. 382
Rivet Machines No. 0 or No. 1 Waterbury or Manville.

No. 384
Florist Wire Machines.

No. 411
A 5-keg nail tumbler.

No. 412
Tensile testing machine for low carbon wires No. 5 to No. 25 gauge.

No. 413
U. S. S. M. Power Eyeletting machines, type B.

No. 414
Two take-ups. 60″ reel by 32″ traverse, with jacks, and chain drive from capstan shaft, also two let-off stands, and 36 x 8 capstans with spur drive.

No. 415
Paper wrapping machine, coils 16″ to 22″, 100 lb. weight, Terkelsen 1C or equivalent.

No. 416
Small riveting machines, Townsend No. 1 or equivalent.

No. 419
Single spooler, 6½ x 6½ for No. 20 hard basic.

No. 420
4 block rod bench, 22″ or 24″.

No. 423
Automatic roll feed for press, 2″ stroke, stock 3″ x 1/16″.

No. 425
Lewis-Shepard lift trucks, about 45 x 20, height 6″.

No. 426
Loom for brass, copper and bronze, 100 mesh.

No. 427
2¼″ x 6″ c. r. mills with take-ups.

No. 429
Rod and wire trucks.

No. 430
Double stroke cold headers, Waterbury or Manville No. 0, up to 3/16 wire 1″ blank.

No. 433
Electric butt welder, 8 to 16 ga.

No. 434
Electric spot welder for wire and light sheets.

No. 435
Nail machine (roofing) ⅝″ head on 12 ga.

No. 436
Flattening mill for .10 x .014 stapling.

No. 437
Tensile testing machine for .090 music wire.

Dunscomb Associates

BOX 320, C/O WIRE AND WIRE PRODUCTS — 17 EAST 42nd ST., NEW YORK, N. Y.

REGISTRY OF USED WIRE MILL MACHINERY

CONTINUOUS PROFITS

THERE is more to wire drawing than roughing down rods with bull blocks.

WE hear a lot about this phase of a complicated game, but after all, the finished product is what tells the story.

CONTINUOUS draft machines have been definitely proven most economical for finishing wire. Our machines, both wet and dry draft, designed and built in our plant, have many points of superiority.

OF rugged construction, they are practically foolproof, are easily strung-up and adjusted. Maintenance costs are reduced to a new minimum.

Battery of Double Six-Draft Machines with remarkable high-production, low maintenance record.

WE manufacture and have sold thousands of continuous machines for intermediate and fine wires, with five, six and eight drafts in two banks. Our cone-type machines are also popular for fine wires. For those who still prefer the single-hole machine we make a frame with any desired number of single or double blocks.

POSITIVELY these machines will save money in labor and production. You owe it to your plant to investigate our machines before adding new equipment.

SLEEPER & HARTLEY, INC.

WORCESTER, MASS., U. S. A.

DESIGNERS & BUILDERS OF PRODUCTION WIRE MILL EQUIPMENT

WIRE AND WIRE PRODUCTS

A monthly publication devoted to the production of Wire, Rod and Strip Wire Products and Insulated Wire and Cable.

DRAWING—ROLLING—EXTRUDING—FORMING—FABRICATING

Vol. 9 October 1934 No. 10

Designated as

Official Publication By The Wire Association

Contents

"Collective Bargaining, 1934 Model" By Frank W. Bullock 367

The Issue: Does section 7A of the National Industrial Recovery Act offer Labor a "New Deal" in fact, or only the 'Old Deal" painted over?

Power Plant Improvements Effect Material Savings . . . . . By Waldo Hutchinson 371

The Atlantic Wire Company of Branford, Conn. effects yearly savings of from $5,000 to $8,000 by revamped power system.

Annealing With A Lavite Furnace . . By A. E. Bellis 376

Through the utilization of "off-peak" current and the storage of resultant heat, material savings in the cost of current for heat treating are effected by this process.

A Review of Recent Wire Patents 380

Imports And Exports 379

'Round The World With The Wire Industry 381

Buyers' Guide 391-392

—ASSOCIATE EDITORS—

Kenneth B. Lewis, Consulting Wire Mill Engineer
W. H. Spowers, Jr., Consultant on Galvanizing
L. D. Granger, Chief Metallurgist, Wickwire Spencer Steel Corp.
Lancaster, Allwine & Rommel, Consultants on Patent Information

European Correspondents

Great Britain
A. C. Blackall
7 Vincent Sq. Mansions
London, S. W. 1, Eng.

Germany & Belgium
Paul Fidrmuc
Sierichstrasse 3,
Hamburg, Ger.

R. E. Brown, Business Manager

Executive and Editorial Offices:
17 E. 42nd St., New York City. Telephone: Murray Hill 2-4188

Publication Office: Washington, N. J.

Annual Subscription, U. S. $5.00, Canada $5.60

50 Cents a Copy Issued Monthly Foreign, $7.50

Copyright, 1934

Kelly Wire Die Corporation

✦

TANTALUM

TUNGSTEN

&

DIAMOND

DIES

✦

Kelly Wire Die Corporation

Vascoloy Ramet Agents

256 W. 31st St., NEW YORK

PROCEEDINGS AND DISCUSSIONS OF THE PAPERS OF THE 1934 Wire Association Meetings

PRICE $5.00 PER COPY

✦ ✦ ✦

LIMITED EDITION

ORDER YOUR COPY NOW

THE WIRE ASSOCIATION

17 E. 42nd St., New York, N. Y.

WIRE & WIRE PRODUCTS, Vol. 9, No. 10, October, 1934. Executive office, 17 East 42nd St., New York, N. Y. Published by the Quinn-Brown Publishing Corp., Richard E. Brown, President; R. S. Spengel, Secretary and Treasurer. Publication office, 49 E. Washington Ave., Washington, N. J. Subscription price: U. S., $5.00; Canada, $5.60 per year, 50 cents per copy; Foreign, $7.50 per year. Entered as second class mail at the Post Office, Washington, N. J., under Act of March, 1879. Copyright, 1934, by Quinn-Brown Publishing Corp.

FIRTHALOY

DIES

FOR PRODUCING SHAPES

Many manufacturers are now taking advantage of the economies effected through the use of Firthaloy Cemented Carbide dies for producing special Shapes.

If your production problems are those of drawing or extruding round, standard or special shapes it will pay you to investigate the economic advantages that can be obtained by equipping your plant with Firthaloy Cemented Carbide Dies.

Send us a blue print or sketch of the shapes you now produce and we will quote you prices on Firthaloy Cemented Carbide Dies without obligating you in any way.

FIRTH-STERLING STEEL COMPANY

Works: McKEESPORT, PA.
NEW YORK CHICAGO
HARTFORD CLEVELAND
DETROIT LOS ANGELES
PHILADELPHIA
GLOBE WIRE DIVISION
McKEESPORT, PA.

WIRE AND WIRE PRODUCTS

A monthly publication devoted to the production of Wire, Rod and Strip.
Wire Products and Insulated Wire and Cable.
DRAWING --- ROLLING --- EXTRUDING --- FORMING --- FABRICATING

Vol. 9 October 1934 No. 10

"Collective Bargaining, 1934 Model"

By Frank W. Bullock
1st Lieutenant, Signal Corps, U. S. Army

The Issue

Does section 7A of the National Industrial Recovery Act offer Labor a "New Deal" in fact, or only the "Old Deal" painted over?

Opinion

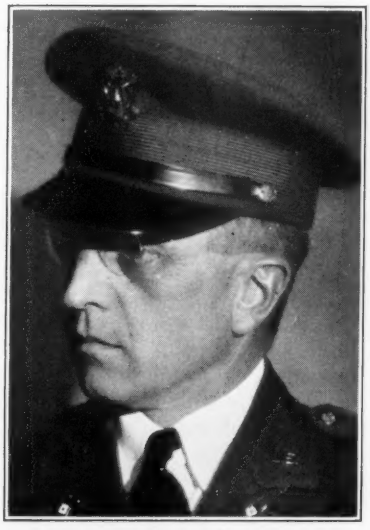
In the National Recovery program, labor is confronted by an opportunity and a challenge. Under intelligent and trustworthy leadership, labor may, by settling old issues, achieve a new social and economic independence. Lacking such leadership, American labor is headed for exactly nowhere.

"THE present task of the law is nothing less than to rehabilitate the individual—not to make the subordinate independent of the superior, not to turn corporations into debating societies, not to disintegrate what we have been at such pains to piece together in the organization of modern industrial enterprise, but to undo enough of what we have done—to give the law direct access again to the individual—to every individual in all his functions."—Woodrow Wilson. (1)

✦ ✦ ✦

TO a great many Americans, labor is simply the way the "other fellow" gets his living, and not much more. That the "other fellow" may be quite human, and sometimes even the sort of chap one likes to go fishing with, never occurs to a whole lot of people. But why should labor be considered as something in a class apart? All human activity is labor of a sort, and few indeed are able to exist in a state of complete inactivity. Some activities are pleasant and stimulating, some are monotonous or just plain disagreeable. Some are undertaken for pleasure, some for a reward, and some from necessity. So far as the expenditure of effort is concerned, no distinction can be drawn between pleasant and unpleasant activities, or between those undertaken for amusement, and those undertaken for pay. But the fact remains that most of the activity that men carry on in getting a living provides little pleasure and a lot of punishment.

(1) Address, American Bar Ass'n, 1910.



FRANK W. BULLOCK
1st Lieut. Signal Corps, U. S. Army
Graduate "Highest Distinction"
Harvard Graduate School of Business Administration.
(Member of the Wire Association)

✦ ✦ ✦

EFFORT devoted to the prosaic task of getting a living must necessarily be directed toward some specific purpose, it must be unvaried, and to be effective, it must be continuous. In other words such effort is not and cannot be entirely free from compulsion, and the more complex the social organization in which one lives, the greater will be the pressure, and the less one's freedom to do or not do what he pleases. As civilized society develops, the scope of individual activity is progressively narrowed, production ceases to be self sufficient, the occupations of trade, transport, and the functional services of leadership, control or management come into being, and a line of cleavage appears in the economic community. "Workers" and "Leaders" become first self conscious—then class conscious, and men begin to think of "Capital" and "Labor" as impersonal opposing forces instead of as "just folks" working with differ-

ent tools, toward the same objective and subject to the same compulsions, and separated only by the accident of different aptitudes, training and environment.

✦ ✦ ✦

I DO not mean to imply for a moment that a lumberjack could become a successful bank president by the mere act of transplanting him, or that a corporation lawyer would be worth union wages in a coal mine. What I do mean is that the line of cleavage which is the source of industrial warfare is not too wide to be bridged by common sense. Industrial revolutions are the product of glands rather than plans, and blood pressure rather than economic pressure is the cause of social unrest.

✦ ✦ ✦

OUR Socialist friends visualize a society in which all work should be undertaken without compulsion and in which work of itself would provide its own compensation. It may well be that the world would be a safer and happier place if such conditions were universal.

✦ ✦ ✦

UNFORTUNATELY most of the world's work for the satisfaction of our every day wants is neither stimulating nor easy. However much it may be lightened by scientific aids, most of it can still be recognized without the slightest difficulty as work. Moreover men of genius are rare, and the great majority of people are not distinguished by any marked loftiness of character. It appears, therefore, that the development of a perfect economic society is somewhat beyond the range of practical accomplishment.

✦ ✦ ✦

BUT, say the advocates of the "New Deal", this is the doctrine of defeatism, the complaint of the hopeless reactionary. Is it not rather the doctrine of realism? Wherein does it suggest that because perfection appears unattainable, that worthwhile improvement of things as they are must therefore be impossible? Because no one fully comprehends the conflicting points of view which separate labor and industry there is no reason why understanding should not be sought. In fact the establishment of some common ground of understanding upon which differences between capital and labor may be composed in the interest of national economic recovery is one of the principles, if not the primary objective of the National Industrial Recovery Act.

✦ ✦ ✦

Angles to the Present Situation

HAVING set the stage—after a fashion—for the discussion which follows, let us examine briefly the present situation from three possible angles:

(1) Labor organizations as they exist today in the United States, their numerical strength, the dream of a "united front".

(2) The basic issue—collective bargaining under Section 7A of N. I. R. A.

(3) Opposing arguments — old and new.

✦ ✦ ✦

Labor Organization

ACCORDING to the census of 1930, there were in the United States 48,829,920 persons of all classes, listed as "gainful workers". Of these, after proprietors, managers, public servants, professional workers, clerks and white-collar workers in general are deducted, 28,269,128 may be classed as "workers" in the commonly accepted sense. These in turn are divided into three groups: skilled, 6,282,687; semi skilled, 7,977,572, and unskilled 14,008,869. The Department of Labor, under date of March 25, 1934 estimated the number of persons actually gainfully employed at 39,000,000. This means that something in the neighborhood of 9,000,000 persons of all classes are "unemployed", perhaps unemployable. This group stands as a threat to any solution of the so-called "labor problem".

✦ ✦ ✦

THEN too, the great majority of workers are unorganized. Organized workers fall into three divisions: those who are members of the American Federation of Labor and its affiliates; those who belong to independent labor organizations, and those belonging to so-called "company unions". The A. F. of L. group includes 109 national and international unions, 29,988 local unions, 49 State Federations of Labor, 804 city central bodies and 673 local trade and Federal labor unions.(1)

✦ ✦ ✦

THE independent unions include a number of bodies which have from time to time broken away from the A. F. of L. and many which have organized independently. In addition there are a relatively small number of so-called radical groups more or less affiliated with the I. W. W. or other communistic organizations. Of the independent unions, the largest in numerical strength are the four great Railway Brotherhoods.

✦ ✦ ✦

IN the general picture of labor organization the company union occupies somewhat the position of an unknown quantity. As to just what company unions are no one seems to know, or at least no two observers seem able to agree, and it is worthy of note that those who most vociferously support the company union idea, are the most reticent when called upon to define the institutions they are supporting. In general, a company union is an organization of workers promoted (and usually controlled) by an employer within his plant or plants, usually bearing the euphonious but not overly illuminating title of "employee-representation plan". The temptation is great to indulge in expressions of personal opinion with respect to the institution of company unions. Such expressions would, however, be a deviation from the basic issues, and do not properly fall within the scope of this report.

✦ ✦ ✦

THE numerical strength of these three grand divisions of "organized" labor is almost impossible of determination in other than the vaguest approximation, because until within the past few weeks no central agency existed for the collection of the facts. It is to be hoped that the newly formed National Labor Board may sometime provide a source of reliable figures. From the mass of conflicting data published from day to day, the strength of the A. F. of L. may be

(1) Estimate by Paul Fredrix Mar, 1934.

estimated at something in excess of 4,000,000 members, and that of the independent unions at about 1,000,000. For the company unions, William Green, president of the A. F. of L., in a recent address said that "an informed estimate" would place their membership throughout the country at "between two and three millions".

✦ ✦ ✦

ALLOWING the widest possible latitude in accepting such estimates it is apparent that not over 8,000,000 workers out of a possible 50 odd millions, or approximately 15 per cent, are in any sense "organized". When we recall that included in the 40 million or more unorganized workers, some 9 million are unemployed, we begin to get a faint conception of the complexity of the problem of "Collective Bargaining—1934 Model".

✦ ✦ ✦

The Fundamental Opposing Strategies

IN spite of the complexity of the problem the fundamental opposing strategies of employers and workers are simple. Disregarding all political and economic implications, the strategy of labor is based on the long cherished dream of labor-militant, presenting a united front to all opposition. But how different are the tactical interpretations of this dream. If we accept the words of the spokesmen of the A. F. of L. the achievement of a united front by labor means the establishment of a state of economic balance under a capitalistic system of economy, which will assure equality of opportunity, economic security and the widest possible distribution and enjoyment of the nations wealth, with free markets and rights of private property unimpaired. Radical spokesmen on the other hand, see in the united front a complete reversal of the social structure-revolution, destruction of the "ruling classes" a dictator-ship of the proletariat, (whatever that means) the abolition of all private property, compulsory production and distribution controlled by master minds (presumably selected from the lowest strata of the working classes), and above all, plenty of parades, mass meetings, oratory and pyrotechnics. The unemployed ask only one question: will this new setup guarantee us jobs—and wages, if so we're for it, if not we aren't interested. But the great majority of workers remain inarticulate and stubbornly individualistic. The voice of the company unions is quite effectively silenced.

✦ ✦ ✦

The Employer Group

THE strategy of the employer group is even more simple. Their doctrine now as in the past is the old idea of "Divide and Rule", and whether expressed in the jargon of New York's Eastside or in classic English flavored with a Harvard accent, the meaning is unmistakable. Employee-representation is only a new camouflage for the same old gun. What I am seeking to convey is, that back of the present disturbing mobilization and strategic alignment of forces, lie the same old issues, the same ambitions, the same fears, the same impenetrable stupidities that have perpetuated industrial strife and repeatedly threatened our national tranquility.

✦ ✦ ✦

"Collective Bargaining" as a Slogan

IT has been said that the American people are ruled by slogans. Whether this assertion be true or not is beside the point, but it is interesting to note that every disturbance in our history has brought forth its crop of slogans: "Liberty or Death", "Forty Four-Forty or Fight", "The Full Dinner Pail", "A World Safe For Democracy", "Return to Normalcy", "Prosperity Just Around the Corner", "The Forgotten Man", "The New Deal"; whatever the occasion we have had our slogans. And now, with the new deal moving noisily into its second year, the old, overworked term "Collective Bargaining" has become a slogan. But when we argue the pros and cons of collective bargaining, just what are we talking about anyhow? It is doubtful is anyone really knows. The trouble is, the term has a variety of connotations and a much wider variety of implications, and when two groups of opposing viewpoints seek to interpret it, the chances are that they never succeed in talking about the same thing.

✦ ✦ ✦

Interpretation of Collective Bargaining

IS there then any possible interpretation of collective bargaining upon which there may be general agreement? Certainly such an interpretation in the terms of business policy, in ethics or even in economics would be difficult if not impossible. But there remains the field of law, which is dedicated to the accurate interpretation of human behavior; surely from the legal point of view there must be an interpretation simple enough to merit common acceptance.

✦ ✦ ✦

PASSING over the old religious and common law conception of the "master and servant" relation of employer and employee, the now universally accepted concept is that of a contractual relation voluntarily undertaken by the parties at interest. Shorn of all legal verbiage a contract is really a simple and readily understandable instrument. Pollack says: "A contract consists in an actionable promise or promises".(1) Chief Justice Marshall has provided a still simpler definition, stating simply that a contract is "an agreement to do, or not to do, a particular thing."(2) A New York court has given another definition in broader terms, which is perhaps the most suited to this discussion, as follows: "A bargain or an agreement voluntarily made upon good consideration, between two or more persons, capable of contracting to do, or forbear to do, some lawful act".(3)

✦ ✦ ✦

A CONTRACT to be valid and complete must include specifically or by implication at least two elements. There must be an agreement which creates an obligation, and the agreement must be enforceable at law. Turning to our definition of a contract, the first thing that invites attention is the fact that, as used by the court,

(1) Pollock on Contracts 8.
(2) Sturgis vs. Crowninshield, and Wheat, 122, (1819).
(3) Gastice vs. Lang, 42 N. Y. 493, (1870).

the words "bargain" and "agreement" describe something complete, a "fact accomplished", not to be confused with any negotations or exchanges leading to its accomplishment. Next the words "voluntarily, made upon good consideration" carry the implication that the "bargain" is made without compulsion affecting either party, and that the terms of the "bargain" are satisfactory to the contracting parties. This implication has been given the effect of law in the courts by repeated actions voiding obligations created under duress. The words, "persons capable of contracting" carry the implications that competency to contract is predicated upon the **absolute freedom** of the individual to enter or refrain from entering upon an agreement which creates an obligation, and upon equality of opportunity through negotiation to complete a mutually satisfactory "bargain". Obviously, therefore, a contractual relationship in which terms are or can be imposed by one party upon another depriving him of freedom of choice or equality in negotiation is faulty.

✦ ✦ ✦

Early Interpretations

IN the early years of industrial development in the United States this simple interpretation of the contractual relation was adequate for the maintenance of reasonably peaceable relations between employers and employees. Employers were proprietors, personally directing their businesses, the hiring of workers was a matter of direct personal negotiation and the resulting "bargains" were relatively free from any element of compulsion. As business enterprises grew in size and complexity and as population became concentrated in congested industrial communities, labor contracts lost their original bilateral characteristics. Employers no longer negotiated directly with workers on terms of equality. Circumstances enabled the employer to dictate terms of employment, the worker was left with but one option, accept the terms or starve.

Present Day Interpretations

THE rise of the corporate form of business organization further complicated the contractual relation of employer and employee. Except for the fiat of the State, the sanctity of which is being challenged by many legal-economists, a corporation is not a person, since it is without conscience and incapable of distinguishing between right and wrong. Obviously, for an individual worker to enter into a "bargain or agreement" with a corporation on anything remotely resembling terms of legal equality is impossible. This does not mean that it is necessarily unfair for a corporation to contract with an individual or that equitable contracts cannot be made between such parties. It does mean that the individual has no power or voice in reaching the "bargain" whether such bargain be advantageous or oppressive. To redress this inequality is the objective of every movement toward "collective bargaining", or what might better be termed "collective negotiation".

✦ ✦ ✦

Nothing New In Idea of Labor Organizing

THERE is nothing new in the idea behind labor organizations as such, it is natural for human beings to unite when confronted by a common danger. Labor organizations are no more characteristic of a machine civilization than are armies, in fact they are similar in many respects. Both are in effect creatures of adversity, both attain their greatest strength in times of unrest and both tend to disintegrate in periods of tranquility. The present growth of labor organization with its attendant strikes has been duplicated in every past period of economic depression. And in each instance, the issues, the arguments, and the inability to work out an enduring solution to the problem have been the same.

✦ ✦ ✦

Idea of Collective Bargaining in 1910

THE present political and economic hysteria is quite similiar to that which occurred at the end of the late war and which led to the abortive conference called by President Wilson in 1919. That conference went to pieces upon a single issue: failure to define collective bargaining in a manner acceptable to the spokesmen for labor and capital. It will be recalled that the employers definition of collective bargaining in 1919 demanded recognition of shop committees and company unions as acceptable agencies for that purpose. When this was rejected by labor the conference blew up with a loud report, and was followed by the usual face saving gesture. A new public body appointed by President Wilson, formulated an elaborate plan for mediating disputes and enunciated a declaration advocating the cessation of strikes in industries directly affecting the public interest. The conference report concluded with the following statement:

"The plain fact is that the public has long been uneasy about the power of great employers. It is becoming uneasy about the power of great labor organizations."

And thus the "New Deal" of 1919 was given a decent burial.

✦ ✦ ✦

Results of National Recovery Act on "Collective Bargaining" Ideas

BACK of the present situation stands Section 7A of the National Industrial Recovery Act, which includes these provisions:

"Every code of fair competition, agreement, and license approved, prescribed or issued under this title shall contain the following conditions:

(1) That employees shall have the right to organize and bargain collectively through representatives of their own choosing, and shall be free from the interference, restraint or coercion of employers of labor, or their agents, in the designation of such representatives or in self-organization or in other concentrated activities for the purpose of collective bargaining or other mutual aid or protection;

(2) That no employee and no one seeking employment shall be required as a condition of employment to join any company union or to refrain from joining, organizing or assisting a labor organization of his own choosing."

✦ ✦ ✦

THESE provisions, beautifully vague, became immediately the focus of a bitter controversy. Union labor spokesmen accepted

(*Please turn to page 382*)

Power Plant Improvements Effect Material Savings

By Waldo Hutchinson

The Atlantic Wire Company of Branford, Conn., effects yearly savings of from $5,000 to $8,000 by revamped power system.

AT the Atlantic Wire Company, Branford, Connecticut, a saving of between $5,000 to $8,000 a year has been effected by steam-diesel hook-up with proper utilization of diesels, uniflow engine and exhaust steam, controlled by instrument and cost records.

✦ ✦ ✦

Power Plant Equipment

THE power plant equipment originally consisted of a Fishkill Corliss engine connected by belt to a lineshaft. Steam was generated in a Manning boiler at 90 lb. gage. Live steam was used for process work, for heating the office and for steam hoists. Exhaust of the engine at about 5 lb. back pressure was used for heating the mill. This was seldom sufficient; so that at times live steam had to be added. All electric power was purchased.

✦ ✦ ✦

AN increase in production also raised the demand for power; so two diesel engines, direct connected to alternating-current generators and exciters, were installed. But the power demand continued to grow; before long the diesels were running with 10 to 15 per cent overload, a very unfavorable condition.

✦ ✦ ✦

AGAIN they faced the problem of supplying more power. Installation of another and larger diesel, combined with a waste-heat boiler, was suggested. But after considering all points, such as supplying an auxiliary burner for night service, the lack of suitable space, time required for delivery and installation, and initial cost, it was decided to purchase additional power. This could be done on short notice without any investment of capital; so a 300-kw. transformer station was installed, which supplied part of the factory with power.

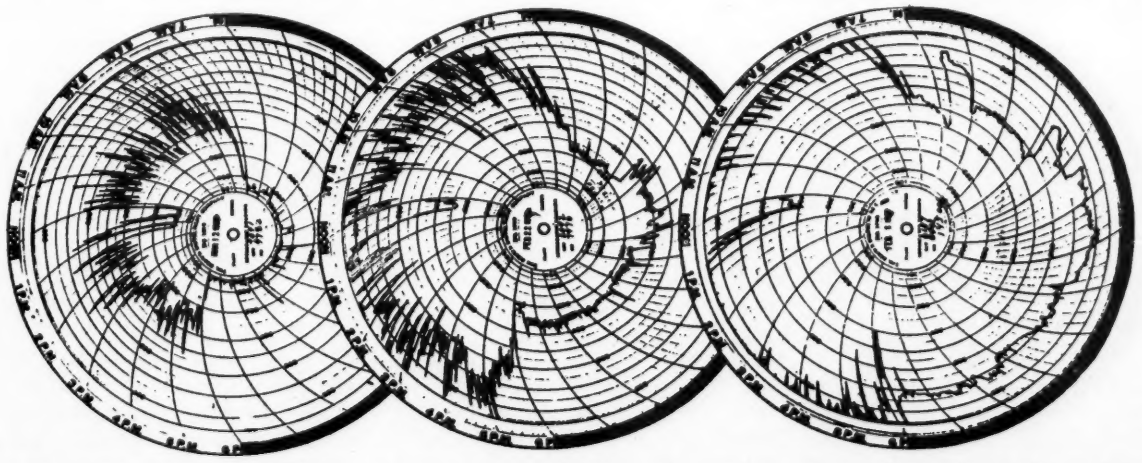
✦ ✦ ✦

EVEN that proved to be not a very good solution for the power problem. The load in a wire mill is highly fluctuating, and as the diesels could not be run in parallel with the outside power it was impossible to adjust the load so that the engines would run at maximum capacity. The result was that considerably more power was purchased than was actually necessary.

✦ ✦ ✦

Need For Additional Power

WHILE power demand increased by leaps and bounds, steam demand remained fairly constant until a change in process work and the contemplated remodeling of several departments made additional boiler capacity and relocation of the steam plant imperative. Mr. George C. . Golem, Chief Engineer, was asked by the management to submit a report and suggestions.



Progressive Improvement in Steam Utilization.

Mr. Golem had difficulty in figuring the amount required because the only records available were the monthly coal bills. However, by dividing the amount of coal used between the day and night run and assuming an evaporation factor, figures were arrived at which proved to be close enough when a check was made later by actually weighing the feed water to the boiler.

✦ ✦ ✦

ALTHOUGH the method was crude at best, it furnished a basis on which to work and from which to estimate steam requirements and suitable savings and suggest changes. It was decided to generate steam at high pressure; use exhaust steam exclusively for process and heat; install an engine that would give a maximum in power output from the amount of steam required by process and heat and discontinuance of purchase of power. Savings were estimated at approximately $8,000 per year and actual figures later on proved very close.

✦ ✦ ✦

Factors In Selecting Equipment

IN selecting equipment, there were three major points considered; First, it had to be adopted to the special requirements; second, it had to eliminate as much manual labor as possible; and third, the cost had to be reasonable.

✦ ✦ ✦

THE most important item on the list was the engine. Looking over several designs, it was soon found that a uniflow had the lowest steam rate for a wide range of load and therefore would give the most kilowatt-hours from the steam used in the mill. Naturally, cost was a very important factor; so they looked over several used units offered for sale. They finally decided, however, upon a new engine large enough to carry the whole load if necessary.

✦ ✦ ✦

THEY decided upon two stoker-fired horizontal-return tubular boiler units of 1,674 sq. ft. heating surface each to operate at 170 lbs. gage pressure. The question of superheat was also taken into consideration. But in view of the fact that the engine would have to run for some time at only 30 per cent of its rated capacity, and all the exhaust was to be used for process and heat, it was concluded that the saving eventually to be derived from superheat did not justify the extra cost expense of installing a superheater at the time.

✦ ✦ ✦

THE stack was quite a problem, as they had very little space where to place one. But a venturi-type stack solved difficulties nicely; in fact, it has so far proved to be one of the best selections. Better still, its cost, completely installed, was only 40 per cent of the price of a self-supporting steel stack of sufficient dimensions to provide draft for maximum boiler capacity.

✦ ✦ ✦

ANOTHER difficult problem was that of coal handling. Coal is delivered by trucks. To reduce labor, the installation of an overhead bunker with coal conveyor and automatic scales was first considered, but it was found that the cost of such an installation was almost prohibitive for the size of the plant. Consequently, a 25-ton bunker space, partly below and partly above floor level, was provided in the boiler room. An overhead rail with hand-propelled electric hoist and a dump bucket were installed at about one-fifth of the cost of the former. Every bucket of coal is weighed on a platform scale before it is put into the hopper. The whole installation works very satisfactorily.

✦ ✦ ✦

TO select the rest of the boiler auxiliaries such as feedwater regulator, boiler-feed pump with governor, soot blower, damper regulator and closed feed water heater, was not difficult, and features of design and price decided either for or against each item. For example, the damper regulator was taken from the old boiler where it had done faithful service for fifteen years, reconditioned at the factory and connected to the throttle of the stack turbine.

✦ ✦ ✦

Hot Water For Pickling

TO have always a sufficient amount of hot water available when a pickling vat is dumped, a hot-water storage tank of 2,400 gal. capacity, capable of heating 2,000 gal. per hour from 60 to 180 deg., was installed.

✦ ✦ ✦

Metering And Recording Instruments

THE only item of importance not so readily disposed of was the number and type of metering and recording instruments. Final choice was as follows: One recording and one indicating steam-flow meter for each boiler, one recording flow meter for boiler feed water, on recording flow meter for exhaust steam to mill, one two-pen flue-gas temperature recorder, one steam pressure recorder, one feed-water temperature recorded and a four-pointer draft gage.

✦ ✦ ✦

ALL recording instruments are mounted on an attractive slate panel in the chief engineer's office, while the indicating instruments are mounted on an ebony asbestos panel in the boiler room. No decision could be reached on a CO_2 recorder, but, by means of an Orsat, draft gage and flue-gas temperature recorder, they manage to run the boiler at fairly high efficiency.

✦ ✦ ✦

ORIFICE plate and manometer connections were also installed in the auxiliary steam line and interconnected with the manometers from each boiler. As only one boiler is in operation at a time, the meter of the other boiler indicates and records the amount of steam used by the auxiliaries.

✦ ✦ ✦

Full Utilization of Diesel Cooling Water

FULL utilization of diesel cooling water was another interesting problem. Before the change the hot water from the jackets was returned through the mill. As the discharge line was rather long, the

water from one of the diesels had to be wasted into the sewer during the summer months in order to keep the temperature low enough for safe operation.

✦ ✦ ✦

AN entirely new arrangement was provided. Water from the city main enters the plant close to the diesel engines, and the hot return goes into a concrete tank of about 5,000 gal. capacity, located in the boiler room. From this it is transferred by a small float-controlled rotary pump to a tank of 1,500 gal. capacity (picked from the junk pile). Located close under the roof and about 22 ft. above floor level.

✦ ✦ ✦

ON top of the concrete tank. which is about 6 ft. above floor level, is a collecting tank for the returns. Into this tank, through a float-controlled valve, make-up water is supplied from the tank under the roof, which also keeps the hot storage tank filled. The elevation of the roof tank is sufficient to give the necessary head for a speedy flow through the mill, with supply piping of generous dimensions. A float valve near the bottom of the concrete tank admits water from the city main when the diesels are not running.

✦ ✦ ✦

Engine Room Equipment

EQUIPMENT for the engine room was easy to select. The only difficult problem to be solved there was that of the oil separator. Pickling vats are heated by steam blown directly into the solution. It is imperative that this steam be absolutely free of oil.

✦ ✦ ✦

THE separator first considered was quite heavy, was made only in a vertical design (not suited for the purpose) and was high in price. The sales engineer explained that due to the heavy impacts which in this case would be 400 per minute, it was almost impossible to eliminate all the oil from the exhaust of a uniflow in an ordinary separator and that his was the only separator which could do it successfully.

October
Report on Maintenance Work. Engines.

8. 9:30 - 9:50 forced shutdown on Diesel 1. Replace one brush on alternator.

12. Eng. 2 cyl. 5 one hand hole plate new gasket.

13. Rocker arm shaft taken out on Uniflow, bearing overhauled and adjusted. Oil tank on Uniflow cleaned. 10 gal. new oil.

19. All compressor valves on both Diesels taken out, cleaned and ground.

20. Diesel 2 cyl. 1 intake valve drawn, piston inspected. (vtop is cracked through.) Intake valve exchanged.

22. 7:15 - 8 a. m. Forced shutdown on Diesel 1. Gasket on hand hole plate blows out on Cyl. 1, replaced.—Eng. 2 piston 1 exchanged, start 2 p. m.

27. Fuel valves No. 1 and 2 exchanged on Diesel 1. 2 new atomizers, one needle straightened.

✦ ✦ ✦

Total Cost of Power.

Steam	$1,643.46
Diesel	825.13
Skinner	351.32
Outside	253.10
Total	$3,073.01
Sold to B. H. T. Co.	290.88
Actual Cost	$2,782.13

Wire produced 2808920 lbs. or 1404.5 ts.
Cost per ton of wire produced $1.98
Pounds of wire per Kw. hr. 34.763

Steam Cost for Month of October

Water 39634 cu. ft. at 12c/100	$ 47.56
Chemicals 123 lbs. compound at 9c	11.07
Coal 142.35 ts. at $6.05	861.20
Labor, operating	458.80
cleaning	32.79
Maintenance, labor repairs $13.95	13.95
Supplies, rags 10 lbs. at 16c	1.60
cyl. oil 4 gals. at 83c	3.32
Fixed Charges	213.17
Total Cost	$1,643.46

✦ ✦ ✦

Steam generated 3229M lb. Boiler operated 682 hrs.
Load factor on rated capacity 58%
Gross Cost per M lb. of steam 50.9c
Net Cost per M lb. of steam 44.3c

TO an ordinary oil separator, they attached a drum 24 in. in diameter and 14 ft. long. Some distance from the end, where the exhaust entered, they placed a baffle at such an angle that no recoil was possible. When completed, the whole arrangement weigh-

Electric Power Cost for Month of October

a. Diesel Engine

Fuel Oil 3952 gal. at 5.44c	$215.00
Lub. oil 72.5″ at 73.1c	53.00
Supervision	133.00
Maintenance, Labor 2.70	
Repair 17.33	20.03
Supplies, rags 10 lbs. at .16c	1.60
kerosene 5 gals. at 14c	.70
Packing	1.60
Fixed Charges	400.40
Total Cost	$825.13

Kw. Hrs. generated 42270 operated 270 hrs.
Load factor on rated capacity 61%

Gross Cost per kw. hr.	1.953 c
Net cost per kw. hr.	1.005 c
Cost of fuel oil per kw. hr.	.508 c
Cost of lub. oil per kw. hr.	.125 c
Cost of supervision per kw. hr.	.314 c
Cost of maintenance per kw. hr.	.0473c
Kw. hrs. per gal. of fuel oil	10.7
Kw. hrs. per gal. of lub. oil	583

b. Uniflow

Steam 564.8 M lbs. at 50.9c	$287.50
Supervision	123.57
Labor, cleaning	32.79
Lub. oil 19.5 gals. at 62c	12.09
Cyl. oil 10 gals. at 83c	8.30
Maintenance, labor	
repairs	
Supplies, rags 10 lbs. at 16c	1.60
kerosene gals. at c	
greases 2 lbs. at 40c	.80
Fixed Charges	172.17
Total Cost	$638.82

✦ ✦ ✦

Kw. hrs. generated 39340 Eng. operated 490 hrs.
Load factor on rated capacity 27.54%.
Gross cost per kw. hr. 1.625c
Net cost per kw. hr. 1.092c
Cost per kw. hr. on Diesels, gross 1.953c net 1.005c
Cost per kw. hr. on Skinner, gross 1.625c net 1.092c
Average cost, both units, gross 1.789c net 1.048c

✦ ✦ ✦

Power from outside		Power to B.H.T. CO.	
11.1.	30834	11.1.	102020
10.1.	30430	10.1.	94748
	404 x 16		7272 kw. hrs.
	6464 kw. hrs.		

ed only half as much as the separator first considered, and the cost was only about 30 per cent of the other. So far the results obtained have been excellent.

BESIDES having a steam separator, the engine is provided with an automatic stop system which protects against damage by overspeed or water.

TO facilitate the handling of engine parts during installation and maintenance, a hand-operated traveling hoist of one ton capacity was installed in the engine room.

✦ ✦ ✦

Plant Layout

THE plant was laid out and equipment arranged in the same manner as it was selected. A general contractor broadly experienced in power plant work was employed to erect the building, auxiliaries and piping according to suggestions The result is an up-to-date plant with an abundance of daylight everywhere, well ventilated and with sufficient elbow room. Needless to say, the tops of of the boilers were heavily lagged, all piping, (including hot storage and feed water heater) was well insulated and a very neat job was made of it.

✦ ✦ ✦

Operating Difficulties

WHEN the new plant was started, the operation was far from being undiluted bliss. It took some time before equipment as well as men had been induced to perform efficiently. Now the whole plant (boilers, diesels and uniflow), a total of about 900 hp., is run and taken care of by one man on shift, with a part-time laborer who takes out the ashes and does some sweeping and cleaning up.

✦ ✦ ✦

AS the changes in the mill had not been completed when the new plant began operation, the old engine had to be run with steam supplied from the new boiler plant. It was shut down for good and then they began to figure the savings derived from the new installation.

✦ ✦ ✦

Power Cost System

IN the meantime Mr. Golem had worked out a power cost system. While no claim is made that this system is perfect, it suits the conditions and has been approved by the management. (See records for month).

Distribution of Steam in M#

Loss through safety valves	32.3
Auxiliaries	348.00
Feedwater and hot storage	322.9
Process and Heat	1961.00
Power	564.8

Report on Maintenance During Month. Boilers.

1. One grate renewed in boiler No. 2
4. Defective steam cylinder of boiler feed pump replaced by new one.
13. Regulating valve on stack turbine overhauled and packed.
16. One grate renewed in boiled No. 2.
23. One grate renewed in boiler No. 2.

ACCORDING to this system, the total cost of steam generated by the boiler is computed first. The loss through safety valves and the amount used to heat the feed water and hot storage is estimated. This sum, plus the quantity recorded by the flow meter for steam to auxiliaries and exhaust to mill, is subtracted from the total amount of steam generated by the boiler. The remainder is charged to power.

✦ ✦ ✦

IT is then an easy matter to compute the cost per kilowatt-hour. In the records shown the "gross" per kilowatt-hour is the total cost including all fixed charges and equipment maintenance. The "gross" cost on the diesel was 1.953c per kilowatt-hour. On the uniflow it was 1.625c, giving a straight average of 1,789c for both units. The "net" cost per kilowatt-hour was 1.005c for the diesel and 1.092c on the uniflow, giving a straight average of 1.048c for both units. In figuring the "net" for the uniflow, the total cost of $638.82 was reduced by $172.17 for fixed charges on engine equipment and by an additional $37.29 for fixed charges in cost of steam used.

✦ ✦ ✦

Calculating Monthly Savings

SAVINGS for the month were computed as follows: From the record it will be seen that a total of 88,070 kw. hr. was consumed during the month. This amount if purchased, would have cost about $2,150. To this must be added the cost for steam which would have been $1,360, making a total of $3,510. The actual cost, including all charges for overhead and maintenance, was $3,073, a saving of $437 per month, or $5,250 per year.

✦ ✦ ✦

Uniflow Power Cost

IT will be noted that the total uniflow power cost is given as $638.82 on the second record sheet while the presumable identical "Skinner" cost on the third sheet is given as $351.32. The former value is correct. The other has been reduced to take account of the fact that the total uniflow power cost includes some of the steam cost included on the first sheet. The correction is applied at this point for convenience and gives the correct figure of $3,073.01 (third sheet) for the total power cost.

✦ ✦ ✦

WHEN it is taken into consideration that the uniflow was running at only 27 per cent of its rated capacity, that the estimated amount of steam for process work had not been reached at that time, that not much steam was required to heat the mill in October, and that some power is still bought it will be realized that the estimated saving of $8,000 a year will be closely approached under normal conditions.

Progressive Improvement In Steam Utilization

AS previously stated, the changes in the mill had not been completed in October. For example, live steam was still used for process work. Progressive improvement in steam utilization is shown by the three charts. The amount used can clearly be seen from the night run of February 5. (Steam during day run includes amount used by old engine.) By Feb. 22 the change had been completed, but still more steam was used than was considered necessary. Thermostatic controls were then installed, and the result can be seen from the chart of March 12. Thermostat control was also installed on the diesel engines. Beside saving about 20,000 gal. of water a day during the summer (somewhat less in winter), these permitted running engines at a much higher temperature (130 to 140 deg., against 100 deg.) thus increasing their efficiency considerably.

✦ ✦ ✦

Constant Load Factor Obtained

A VERY important feature of the diesel-steam operation is that all peaks and sudden changes in the load are taken by the steam engine; so that the diesels are run at almost constant load.

PROCEEDINGS AND DISCUSSIONS OF THE PAPERS OF THE 1934 Wire Association Meetings

PRICE $5.00 PER COPY

✦ ✦ ✦

LIMITED EDITION

RESERVE YOUR COPY NOW

✦ ✦ ✦

THE WIRE ASSOCIATION

17 E. 42ND ST., NEW YORK, N. Y.

Annealing With a Lavite Furnace

By A. E. Bellis
The Bellis Heat Treating Co. Branford, Conn.

Through the utilization of "off-peak" current and the storage of resultant heat, material savings in the cost of current for heat treating are effected by this process.

THE cost of current forms a large part of the cost of heat treating by electricity, but the ease of controlling temperature, the facility with which the power may be turned on and off, and the compactness and convenience of design of equipment have brought electrical heat treating into general use in spite of this power cost.

✦ ✦ ✦

A MEANS of reducing electric power cost in heat treating is here described; the storing of electricity in a Lavite Furnace so as to utilize relatively low-cost off-peak electric energy.

✦ ✦ ✦

IN this case the saving is particularly effective because advantage is taken of the gradual drop in temperature by successively annealing different metals at lower temperatures.

✦ ✦ ✦

"ELECTRICITY cannot be stored," said H. K. Harriman, President, U. S. Chamber of Commerce, in a recent article appearing in the Nation's Business. "When water is not required," he said, "it can be stored in reservoirs. When gas is not being used, it can be held in holders. Electricity, however, must be made and generated at the instant the customer requires it."

✦ ✦ ✦

THE new Lavite annealing method to all intents and purposes overcomes Mr. Harriman's statement about this limitation of electricity. The trick comes through the storing, not of electricity as such, but of a useful product of electricity, and the result, because of certain peculiarities of the rate structure back of the industrial use of electricity, is more astonishing than the results of storing almost any other energy commodity such as water and gas.

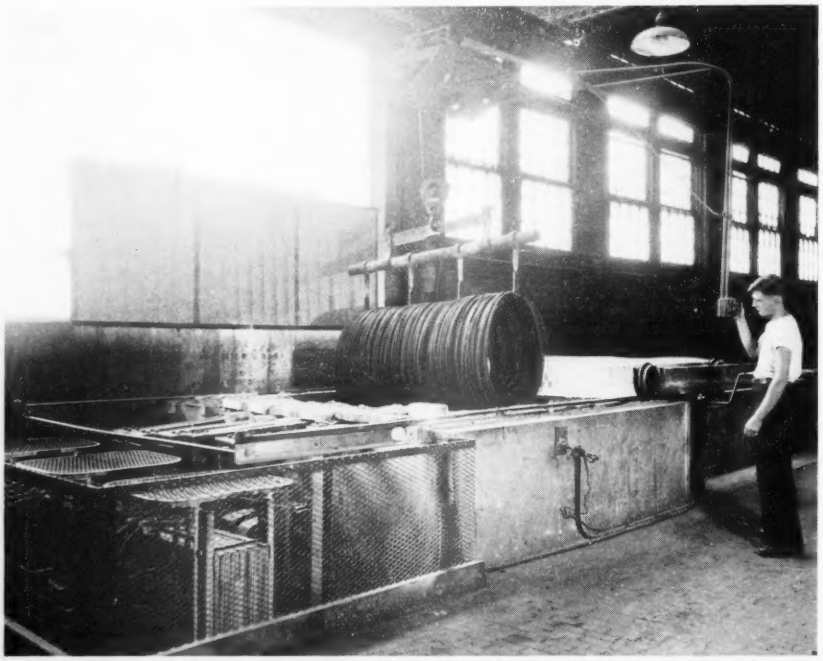
✦ ✦ ✦

THIS new method of storing electricity, is able to show a saving of nearly 60 per cent in the cost of current for heat treating. Most industrial rates for electricity today base the charge upon the peak load or the maximum demand occurring at any time during the 24-hr. day. The reason for this is quite logical. If a customer is going to demand, say, 1000 kw. for even 15 min. at 8 o'clock in the morning, the power company's equipment must be adequate to furnish this peak demand, and this means a proportionately high cost for its transformers, its conductors and switching facilities, to say nothing of provision in its own generating plant.

✦ ✦ ✦

THEREFORE, inasmuch as a customer's charge is based largely on the peak load, it is evident that the more current he can profitably use at off-peak times, the greater will be his power economy. In other words, the flatter the electric power load curve, the lower the unit cost.

✦ ✦ ✦



One man bright anneals 1200 pounds of wire each 15 minutes through this Lavite furnace. ✦

MOST companies have a sharp peak or high demand shortly after the plant starts. This is when all motors are starting up, drawing a maximum load, and when plant activity generally is at its height. If electric energy could be stored in the form of electricity, the storage reservoir could be tapped at the time of the peak load and

thus cause a lowering of the peak, with a resultant direct lowering of the cost for power. Inasmuch as such storage is not feasible, as Mr. Harriman has pointed out, the next best thing is to find some way of profitably utilizing the current at off-peak times. This is what this new annealing method does.

✦ ✦ ✦

THE application of the New Annealing Method requires a study of the power rates, the existing power curves for the plant, the various annealing temperatures and the quantities of metal put through at each temperature, convenient dimensions of the Lavite bath, and the quantity of Lavite required for suitable thermal capacity. The Lavite serves a double purpose, (1) as an agent for heating the wire which is immersed in the bath, and (2) as a means of storing heat energy, which in this particular case is to all intents and purposes a means of storing electrical energy.

✦ ✦ ✦

THE general plan of annealing with Lavite is best described by giving details of a typical wire annealing job. The fine wire of low carbon steel, copper, brass or other metal is delivered to the annealing in coils weighing up to 300 pounds. Three or four of these coils are spread on a 6-ft. long yoke making a charge of 900 to 1200 pounds. A quick acting monorail crane carries this charge of wire to the Lavite bath, where it hangs, submerging the wire in the bath for fifteen minutes. The wire in this time reaches the temperature of the bath (1350° for most steels, 1200° for many nonferrous alloys) and is then removed and quenched or slowly cooled according to the nature of the metal and metallurgical properties required.

✦ ✦ ✦

THIS method of heating the wire entirely prevents oxidization or scaling and gives absolutely uniform heating. Extensive tests made of strand annealing against the Lavite anneal have shown more uniform structure from the Lavite method; this is because all of the coil is in the furnace at the same time so the annealing temperature is independent of rising or falling furnace heats. No single strands or parts of a coil can be over or under heated as no temperature gradient is used to give quick heating; all parts of the Lavite bath are maintained at the constant annealing temperature. The large heat content of the large volume of bath material of high specific heat making the heat variation small even when a large load of work is added to a relatively small bath; this feature of heat storage and inertia is the reason why such uniform wire results from this practice, as well as being the reason why the electricity can be stored below the power demand curve whenever "off-peak" power can be spared.

Table A
Comparison Of Annealing Costs
Furnace Capacity: One Ton* Per Hour

Annealing Costs Per Ton	Bellis Lavite Furnace	Bell Type Furnace	Fuel Fired Furnace
Power	1.30**	1.70	None
Gas or Oil	None	.15	2.82
Hoods or Pots	None	.22	.80
Lavite	.30	None	None
Interest and Depreciation (5 years)	.62	1.11	.59
Power for Fans	None	.05	None
Water and Power for Water	.05	None	None
Week-End Losses	.030	.038	None
Labor	.50	.50	.69
Iron Chips	None	None	.03
TOTAL	2.800**	3.768	4.930

*Larger units give lower costs as labor, depreciation, power, etc., are less as production increases.

**Direct cost without subtracting benefit of off-peak power storage.

✦ ✦ ✦

THE fact that this direct heating in the Lavite bath eliminates the use of the pots in which the charge of wire is packed in other annealing processes not only eliminates the pot cost entirely but the cost of heating this dead load is also eliminated; which cost is frequently equal to or greater than the direct cost of heating the wire. The method of heating the Lavite by passing the current directly through the bath eliminates the deterioration of the furnace; no replacement of the pot or electrodes being necessary on this type of heating, though a nominal maintenance replacement is usually figured based on the conventional obsolescence, as the initial investment being less than any other furnace of the same capacity with the maintenance and obsolescence, charges are proportionately less. The comparison of the cost of this annealing with the usual fuel fired furnace, and the more modern bell type, are as shown in Table A.

✦ ✦ ✦

Development of the Lavite Furnace

THE development of this furnace is an interesting story. It came about from our attempt to solve the problem of heating small heat treating baths to the heating temperature required for hardening high speed steel (over 2300°F.) In fuel-fired furnaces, cast pots were unreliable bath containers and pressed steel pots that were more economical only gave a few hours life at these high temperatures.

✦ ✦ ✦

ENGINEERS explained that the resistance of the bath could not be used as a means of heating a bath salt because the conducivity of the metal pot would cause the pot to short circuit the current and that this defect would also result from the work getting between the electrodes.

✦ ✦ ✦

IN over-coming these (phychic) impossibilities, dimensions of

electrodes, current, metal pot and bath were worked out so that not only could the resistance of the bath material heat the bath most efficiently, but even so that a resistance coil could be placed between the electrodes for increasing the input of current and for the initial melting of the bath material. It works out that the highest resistance of the bath is near the electrodes and the circulation of the liquid prevents any over-heating so that the electrodes can be small in dimensions and near the pot wall, and that short circuits between the electrodes and the pot do not occur.

✦ ✦ ✦

IT was possible to use cast alloy pots with internal heating so that now such pots last for several years at high temperatures and it is also possible to use steel pots of suitable thickness for lower temperature work without any deterioration or replacement of the pot. This method of heating also makes it possible to use rectangular pots and pots of any desired length, whereas in fuel-firing, it was uneconomical to use rectangular pots or pots of large diameter. A pot of this design can be perfectly insulated and a relatively small bath can give a tremendously high heating capacity. However, it is often advantageous to have a relatively large pot for the amount of work to be done and store the current in the furnace at hours when there is no production load on the power line.

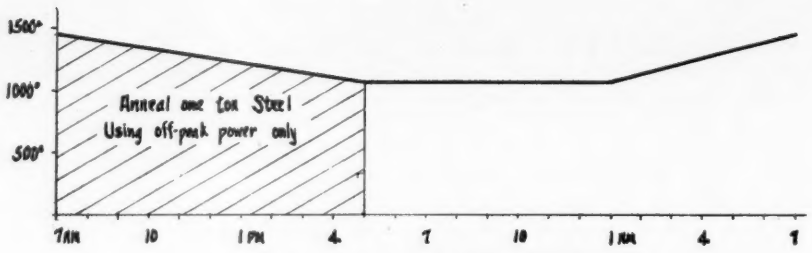
✦ ✦ ✦

A CHART, herewith, shows a heat input into the furnace between midnight and 7 o'clock so that when a ton of steel is added during the morning without any power being on the furnace, the ton of steel will be entirely annealed in the "off-peak" period between 7:00 A. M. and 5:00 P. M. Another more elaborate chart shows how several kinds of metal can be annealed without any furnace current demand occurring during the peak power loading time.

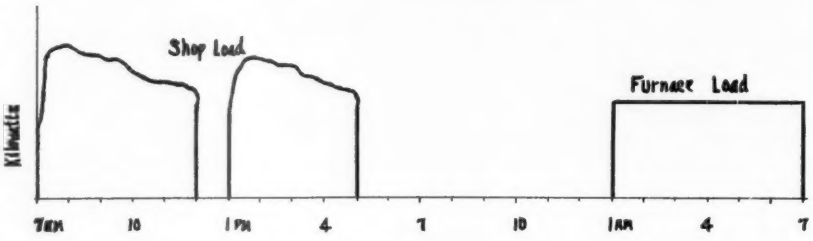
✦ ✦ ✦

ANOTHER interesting application of this heat storage is the case of a customer who anneals fine steel and fine copper wire. By annealing steel in the morning and copper in the afternoon, they store off-peak power before the shop load goes on in the morning to get the furnace to the steel annealing temperature of 1350°F. The last charge of steel is annealed at a temperature of 1200°F.,

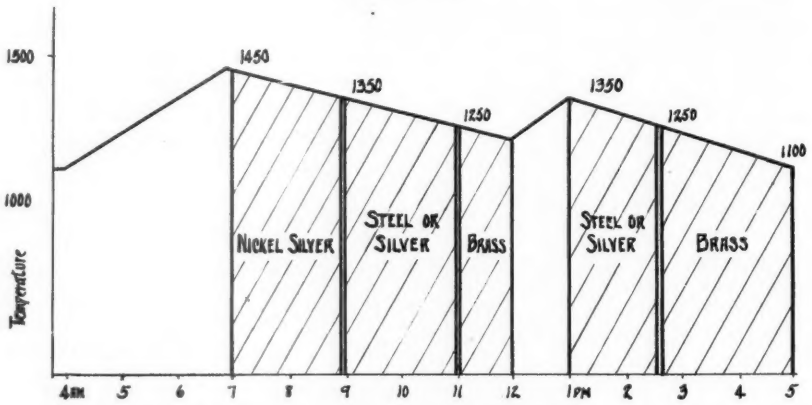
(*Please turn to page 385*)



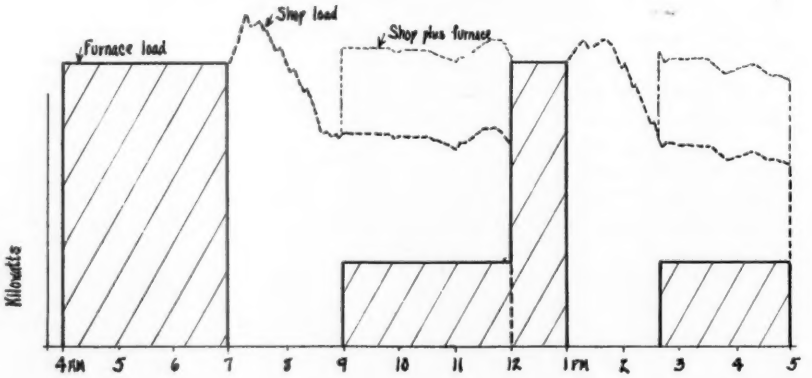
TEMPERATURE CURVE & WORK PROGRAM



POWER CURVE



TEMPERATURE CURVE & WORK PROGRAM



POWER CURVES

Exports and Imports of Wire

Exports of Iron and Steel Wire Products in July 1934 and July 1933
(In gross tons)

	July 1934	June 1934	July 1933
Wire rods	576	2,539	1,038
Hoops, bands and strip steel	2,556	2,944	2,721
Plain black or galvanized iron or steel wire	3,241	3,249	1,526
Barbed wire and woven wire fencing	3,033	3,815	2,433
Woven wire screen cloth	83	82	77
Wire rope	248	240	203
Insulated iron or steel wire and cable—see analysis below			
Other wire and manufactures	444	574	132
Wire nails	809	1,578	1,026
Tacks	57	35	26
Other nails, including staples	291	386	245
Bolts, machine screws, nuts, rivets and washers	427	436	214
Total, these 11 classifications	11,765	29,688	9,641

Imports of iron and steel wire and wire products into the United States
(In gross tons)

Concrete reinforcement bars	336	65	122
Hollow bars and drill steel	131	75	44
Merchant steel bars	1,881	1,881	1,605
Wire rods	791	1,377	1,753
Barbed wire	1,098	880	550
Round iron and steel wire	315	228	388
Telephone and telegraph wire	....	....	....
Flat wire and strip steel	132	125	90
Wire rope and strand	166	120	115
Other wire	131	163	126
Hoops and bands	1,868	1,669	1,842
Nails, tacks and staples	1,198	873	339
Bolts, nuts and rivets	1	12	22
Total, these 13 classifications	8,048	7,468	6,996

REGISTERING a gain of 13,780 gross tons the United States export trade in iron and steel products climbed to a total of 233,186 tons, the third highest figure registered by any month of 1934. Imports, on the other hand, declined—to 17,676 tons, the lowest figure for any month over the ten years.

✦ ✦ ✦

SCRAP was, as usual, the chief product exported from a tonnage standpoint—the total of 155,812 tons of this product exported being the largest for any month of record.

✦ ✦ ✦

JAPAN, again the leading market on a tonnage basis, took in all 104,001 tons of American iron and steel including 101,293 tons of scrap and 1,325 tons of tin plate—her total purchases being the largest by weight ever sold her during a period of equal duration. Canada, the second market, took in all 23,759 tons of iron and steel including 9,612 tons of skelp, 2,685 tons of black steel sheets, 1,874 tons of plain structural shapes, and 1,350 tons of "other" plate.

✦ ✦ ✦

RECEIPTS of merchant and other steel bars totaled only 1,881 tons including 863 tons from Belgium, 381 tons from France, 286 tons from Germany, and 216 tons from Sweden.

✦ ✦ ✦

HOOP and band imports came into prominence with the season of the year with Belgium, 1,288 tons, and Germany, 455 tons, the principal sources of the 1,868 tons received.

✦ ✦ ✦

BELGIUM rose to the rank of chief supplier of iron and steel products to the United States. Her total of 4,664 tons included 1,288 tons of hoops and bands, 1,206 tons of structural shapes, and 863 tons of merchant and other steel bars. Next in rank was Germany whose 3,327-ton total included 1,105 tons of nails and 789 tons of barbed wire along with other materials. British India was third with shipments totaling 2,352 tons of pig iron, while Canada was fourth with scrap (864 tons) and ferro-manganese (800 tons) accounting for the principal part of her 1,770-ton total. Sweden's trade of 1,544 tons included 519 tons of wire rods, 216 tons of merchant and other steel bars, and 131 tons of hollow bar and hollow drill steel, while of the Norwegian total of 1,315 tons 1,311 tons was ferro-manganese.

✦ ✦ ✦

IMPORTS of card clothing doubled to total 22,411 square feet valued at $21,147—imports coming from the United Kingdom (20,529 square feet valued at $18,464), German (1,848 square feet valued at $2,299) and 54 square feet valued at $2,299) and 54 square feet valued at $384 from Switzerland.

✦ ✦ ✦

WIRE cloth and screening imports rose to 69,032 square feet from the 57,509 square feet received in June. Germany was the principal source of imports with a trade amounting to 38,609 square feet, being followed by France with 17,369 square feet, Canada with 8,921 square feet, the United Kingdom with 2,280 square feet, and the Netherlands with 1,863 square feet.

✦ ✦ ✦

FOURDRINIER and other paper making wires were imported in July to the extent of 86,407 square feet—71,367 square feet of which came from Austria, 8,603 square feet from France, 6,027 square feet from Sweden, and 330 square feet from Belgium.

✦ ✦ ✦

THERE was no wire fencing and netting of the type galvanized before weaving received during July, but 958,750 square feet of that galvanized after weaving was received from Belgium (733,750 square feet) and Germany (225,000 square feet).

✦ ✦ ✦

WIRE heddle imports were low at 532,000 pieces—this trade being divided between France (300,000 pieces), Belgium (200,000 pieces), and the United Kingdom (32,000 pieces).

✦ ✦ ✦

EXPORTS of iron and steel wood screws during June, 1934 totaled 43,595 gross, valued at $5,436. Of this total Japan took 11,400 gross, valued at $1,128; Cuba 9,538 gross, valued at $1,075; Colombia 9,129 gross, valued at gross, valued at $212; Chile 2,288

(*Please turn to page 388*)

A Review of Recent Wire Patents

No. 1,965,408, MEANS FOR MOLDING WIRES IN GLASS, Patented July 3, 1934 by Christopher Gabriel Eden, Croxley Green, and Colin James Smithells, Bushey, England, assignors to The M-O Valve Company Limited, London, England.

A mould is provided for spacing the electrode support wires of an electric discharge tube so that these wires are spaced apart in a circle and project from the glass bead.

✦ ✦ ✦

No. 1,965,993, ARTICLE OF MANUFACTURE, Patented July 10, 1934 by William H. Sommer and Charles F. Bailey, Peoria, Ill., assignors, by mesne assignments, to The National City Bank of Cleveland, Cleveland, Ohio, a corporation, and John A. Chapman, Chicago, Ill., trustees.

This wire mesh fabric is intended for holding plaster or concrete and has wire projections for the purpose of holding the supporting surface spaced from studding and the like.

✦ ✦ ✦

No. 1,966,305, WIRE DRAWING APPARATUS, Patented July 10, 1934 by Edwin J. McIlvried, Akron, and Jesse C. Bittman, Cuyahoga Falls, Ohio, assignors to The Vaughn Machinery Company, Cuyahoga Falls, Ohio, a corporation of Ohio.

This apparatus includes a device for delivering the wire with means for reeling the wire issuing from the delivering device, the wire then being tensioned so that it may be cleaned by having a fluid jet directed against it at an angle which is acute to the axis of the strand.

✦ ✦ ✦

No. 1,966,494, COIL WINDING MACHINE, Patented July 17, 1934 by Clem H. Franks. La Grange, Ill., assignor to Western Electric Company, Incorporated, New York, N. Y., a corporation of New York.

Included in this coil winding machine is a device in contact with the rotating strand material wound on the coil and responsive to the increased diameter thereof for controlling the length of strip material being fed.

✦ ✦ ✦

No. 1,966,517, METHOD OF AND APPARATUS FOR MAKING ARMORED CABLE, Patented July 17, 1934 by George E. Phillips, Ben Avon, Pa., assignor to National Electric Products Corporation, New York, N. Y., a corporation of Delaware.

By the application of the armor, the cable is rotated about its longitudinal axis and advanced longitudinally, an insulated strip being applied to the unarmored cable and this strip is wrapped helically around the cable by the rotation and longitudinal advance thereof produced by the application of the armor.

✦ ✦ ✦

No. 1,966,516, METHOD OF AND MEANS FOR MAKING ARMORED CABLES, Patented July 17, 1934 by George Ernest Phillips, Ben Avon, Pa., assignor to National Electric Products Corporation, Wilmington, Del., a corporation of Delaware.

More specifically, this invention relates to a device for wrapping insulating material about wire employed in the manufacture of armored cables.

✦ ✦ ✦

No. 1,967,932, APPARATUS FOR THE PRODUCTION OF WIRED GLASS, Patented July 24, 1934 by Joseph Gaskell, St. Helens, England, assignor to Pilkington Brothers, Limited, Liverpool, England, a company of England.

The invention lies particularly in a device for positioning a second roll of wire at the end of a first roll of wire so that the second roll of wire will be in substantially the same plane as the wire already incorporated in the wire glass.

✦ ✦ ✦

No. 1,968,019, ELECTRIC CABLE, Patented July 31, 1934 by Charles E. Bennett, Hawthorne, N. J., assignor to the Okonite-Callender Cable Company, Incorporated, Paterson, N. J., a corporation of New Jersey.

In the construction of an oil filled cable, this inventor takes advantage of the pressure built up, due to temperature changes so as to maintain the cable system in working order.

✦ ✦ ✦

No. 1,968,251, TAPE TENSIONING MEANS FOR CABLE WRAPPING MACHINES, Patented July 31, 1934 by Stanley Forrest French, Dobbs Ferry, N. Y., assignor to Anaconda Wire & Cable Company, New York, N. Y., a corporation of Delaware.

This inventor provides means to produce a constant tension on the tape while it is being wrapped about the wire conductor.

✦ ✦ ✦

No. 1,968,306, GARMENT HANGER FORMING MACHINE, Patented July 31, 1934 by John H. Moore, Detroit, Mich., assignor by mesne assignments, to Andrew Ruen Hanger Co., Inc., a corporation of Michigan.

More particularly, the inventor has provided a machine for twisting wire into the form of garment hangers, the machine being described as an improvement upon the inventor's prior U. S. Patent No. 1,888,803 dated November 22, 1932.

No. 1,968,670, METHOD OF AND APPARATUS FOR ROLLING RODS, Patented July 31, 1934 by Willard R. Carroll, New Haven, Conn., assignor to Farrel-Birmingham Company, Inc., Ansonia, Conn.

This machine is adapted to roll rods of comparatively small diameter from billets of relatively large diameter.

✦ ✦ ✦

No. 1,968,687, PROCESS OF AND APPARATUS FOR COATING WIRE, Patented July 31, 1934 by Charles D. Johnson, Worcester, Mass., assignor to Johnson Steel & Wire Company, Inc., Worcester, Mass., a corporation of Mass.

The apparatus is adapted for plating wire in straight lengths.

✦ ✦ ✦

No. 1,968,802, METHOD AND MACHINE FOR PRODUCING SPRINGS, Patented July 31, 1934 by George G. Powers and Clarence A. Rhinevault, Chicago, Ill., assignors, by direct and mesne assingments to The Powers Spring Corporation, Chicago, Ill., a corporation of Illinois.

By the use of this machine, round spring wire is rolled to a flat cross section in different planes at different points in its length, then delivered to a coiler and wound into the form of a spring.

✦ ✦ ✦

No. 1,969,530, APPARATUS FOR WINDING COILS, Patented August 7, 1934 by Edward Snyder, Fort Wayne, Ind., assignor to General Cable Corporation, New York, N. Y., a corporation of New Jersey.

More particularly, the invention comprises a device including a mandrel for winding layer-wound wire coils of the type in which the turns of the first layer are positively positioned on the mandrel and succeeding turns lie in the main in the groove between the preceding layer.

✦ ✦ ✦

No. 1,969,563, APPARATUS FOR LUBRICATING WIRE ROPE, Patented August 7, 1934 by Halsey G. Kinder, Kenosha, Wis., assignor to Macwhyte Company, Kenosha, Wis., a corporation of Illinois.

This apparatus is adapted to lubricate wire strands before winding, the lubricant being applied in an unheated condition.

✦ ✦ ✦

No. 1,060,666. APPARATUS FOR DRYING INSULATED WIRE, Patented August 7, 1934 by Cordon R. Avery, Westfield, and Heinz Kress, Jersey City, N. J., assignors to Western Electric Company, Incorporated, New York, N. Y., a corporation of New York.

(Please turn to page 386)

'Round the World With the Wire Industry

German Exports For July

ACCORDING to the last report of the German wire cartel, the export market situation in July is viewed with a little more optimism. Orders are showing a further tendency to rise and though prices are still low, it seems that the export market will continue to buy. It is also noted that the United States are buying, as exports of wire nails and tacks increased during the past two months nearly 100% as compared with last year. The domestic business, however, is low compared with previous years.

✦ ✦ ✦

Poland Competes With Germany

THE Polish wire rod outsider competition is now chiefly felt on the British and Scandinavian market. The price of the continental wire rod cartel for export to Great Britain has been cut by 6-7/6s. It is improbable that an agreement will be made at present with the Polish industry.

✦ ✦ ✦

Wire Netting Export Prices

THOUGH there is no agreement existing between British and continental wire netting industry, the industries regard a price of 87% for export to non-British and 86% for Empire markets as the lowest rebate obtainable at this time. Cheaper offers have been made but these are not from cartel members or British manufacturers.

✦ ✦ ✦

Wire As Basis For Barter Trade Agreements

IT has been pointed out in former reports that wire is now forming an object of barter trade agreements. Wire manufacturers and exporters have been busy during past weeks forming agreements with import trade so that certain markets could be worked together. German importers cannot obtain sufficient exchange values and many shipments have recently been held up due to this impossibility. Importers have no such difficulty if they combine with exporters of German products.

✦ ✦ ✦

German Wire Industry 100 Years Old

THE German wire industry is celebrating a jubilee. It is just 100 years since the first wire rope was produced, as on July 23d, 1834 the first wire rope was laid in the copper mine at Clausthal of the Harz mountain district, substituting for the usual hemp ropes or chains. Wire rope quickly became popular in Germany and later in other countries as well. Sixty years ago the first wire rope airway was constructed by Bleichert, Saxony and others followed.

✦ ✦ ✦

Latin America Needs Chromium Plated Screws

DEMANDS for brass wood screws are improving, also more chromium plated wood screws are being sold, but the demand for iron wood screws remains low. Latin America is demanding chromium plated wood screws in large quantities.

✦ ✦ ✦

Canadian And British Nail Market

NEGOTIATIONS are pending with Canadian wire nail makers. Canada supplied during first half of 1934 one single ton of wire nails to the British market, but nearly 5,800 tons during the first half of 1933 and is now the keenest competitor due to import duties. Negotiations at London are carried on with the purpose of limiting competition and distributing the British market between Canada and the IWECO members. Reports that Japanese nails are being sold in great quantities in Great Britain are exaggerated. Monthly imports were below 15 tons recently which is only 0.7-0.8% of total imports.

✦ ✦ ✦

Welsh Plant To Manufacture Rods And Bars

SIR JOHN BEALE, chairman of Guest, Keen and Nettlefolds, Ltd., stated at the recent annual meeting of the company that his firm was about to spend £150,000 on the construction of a plant for the manufacture of steel rods and bars at Cardiff, Wales. The new works will be on most modern lines and will be erected, on the site adjoining the proposed works of the British Iron & Steel Company, Ltd., at East Moors, Cardiff, Wales.

✦ ✦ ✦

Wire Imports In Uruguay

FIGURES available for the February-May 1934 period reveal that Belgium and Germany supplied all of the wire for manufacturing nails, receipts amounted to 641,790 kilos, against 547,855 kilos during the corresponding period of last year. Galvanized wire totaling 167,699 kilos, against 117,080 kilos last year, was supplied by Belgium, Germany, and the United Kingdom, the share of the United States amounting to 4,020 kilos.

✦ ✦ ✦

Effort To Eliminate B W G Gauge Futile

ALL efforts to eliminate the old BWG gauge (Birmingham wire gauge) from the trade have been futile. Although officially cancelled in 1914, the trade has made further use of the BWG since that year, and the Far East, Africa and also some Latin American buyers refuse to accept other gauges. The German wire indus-

(*Please turn to page 390*)

Collective Bargaining

(*Continued from page 370*)

them as an invitation to rush in and organize without let or hindrance. On the other hand, large employers, notably in the steel and automotive industries, held that while they were forbidden to interfere with unionization or to require adherence to a company union as a condition of employment, they were not prevented from offering company unions to their workers —in as attractive a manner as possible. Right then the fight was on —and the real issue, collective bargaining, was for the time being at least, pushed into the background. The old, futile issue of union recognition took the center of the stage and the automobile industry became, for the moment, the principle theater of operations.

✦ ✦ ✦

AN Associated Press dispatch from Washington, under date of March 19th. 1934 summarized the then situation as follows:

"The essential points in dispute in the automobile strike threat are:

The American Federation of Labor unions demand recognition for collective bargaining, reinstatement of discharged union men and an end of discrimination against them; elections to choose the spokesmen in collective bargaining and (happy afterthought(1)) a 20 per cent wage increase.

The employers' stand in brief is: Refusal to recognize unions as such; denial of any discrimination against union men; request that rolls of union members be submitted to them as evidence before union leaders are bargained with; plan to increase pay probably around 10 per cent."

✦ ✦ ✦

THE conference of employers and employees called by President Roosevelt averted the threatened strike—temporarily—but settled nothing. The breakdown of negotiations has been followed by the usual face saving gestures. General Johnson's concluding remarks might have been cribbed bodily from the report of the Wilson committee of 1919. He said:

"A fully organized and unchecked industry could exploit and dominate a whole nation. A fully organized and unchecked labor could do exactly the same. There must be a check on these great powers. These vast organizations of industry and of labor must each be responsible to government and each must admit governmental participation and control. No industrial combination must be permitted to practice monopolistic oppression and exploitation. No labor combination must be permitted to paralyze a whole industry by the unchecked use of power".

✦ ✦ ✦

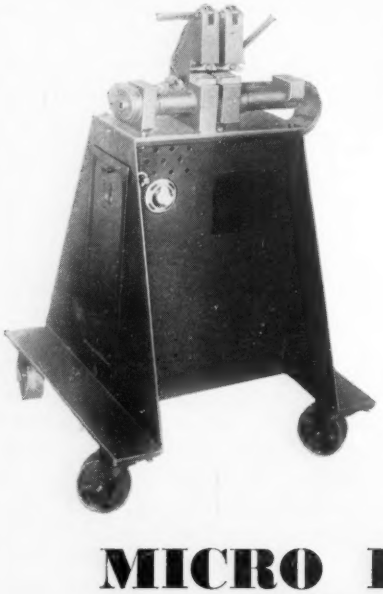
THE net result of all this verbal cross fire is that the situation is exactly where it started; the solution of the problem of collective bargaining is apparently just as remote as ever. Both sides use the term "collective bargaining" loudly and often, but what they are really arguing about is the form to be assumed by the agencies of collective bargaining which in relation to the ultimate results desired, if of little consequence.

✦ ✦ ✦

Arguments Are Old

THE arguments advanced by employers and employees are interesting, not because they are new, but because they are so old. Stripped of detail, the argument of

MICROMETER PRECISION MICRO-WELD TRADE MARK REG. U. S. PAT. OFF.



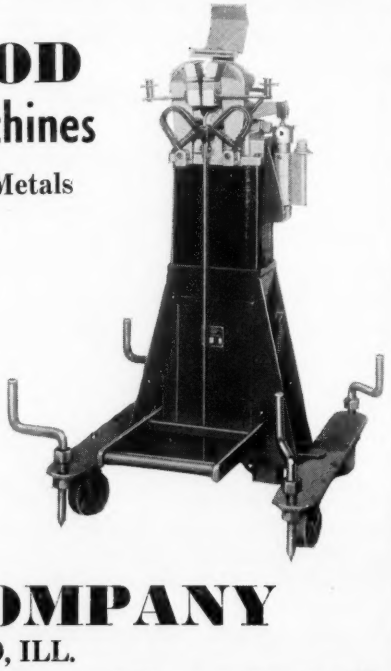
WIRE AND ROD
Precision Welding Machines

Various Capacities—For All Metals
No. 30 Wire to ¾" Wire

Only MICRO-WELDERS are equipped with the patented MICRO-WELD adjustment dials for making precision welds faster.

Faster Welding ✦ ✦ ✦
At Lower Costs ✦ ✦ ✦

Put Your Welding Problems
Up To Us ✦ ✦ ✦



MICRO PRODUCTS COMPANY
20 NORTH WACKER DRIVE, CHICAGO, ILL.
Telephone State 7468 General Offices and Factory, Peoria, Ills.

the employers is based upon a single promise: the perpetuation of the old "master and servant" relationship between employer and employee. They argue that the agreement between worker and employee is impaired by the "intrusion" of a third party into the negotiations. They argue that outside representation can secure to the worker no right that he cannot secure for himself. And invariably they assert that their motives are entirely altruistic, and that the workers would far better trust to their generosity than to rely upon professional "agitators" whose only interest in the worker is the dues he pays.

✦ ✦ ✦

THE argument of organized labor was admirably summed up by Mr. William Green in a recent radio address in which he said:

"What chance of redress has a plaintiff who submits his case to a court in which the defendant is both judge and jury and when his attorney is paid by the defendant?" The law says employees have the right to organize. Shall they control their own organizations, or shall the employers control them?"

✦ ✦ ✦

What Is The Basic Issue

EVEN more striking than the antiquity of these opposing arguments is the fact that neither seeks to define the basic issue of collective bargaining. The struggle for union recognition has been long and bitter. The A. F. of L. holds that it was won when Section 7A was incorporated in the Recovery Act. Even if this contention be true, it fails to settle anything. Industry's definition of collective bargaining is still what it was when the Wilson conference failed. Labor policies always have and always will be conditioned by the policies of capital, unless the entire capitalistic system is to be scrapped. Industrial peace is predicted upon an adequate definition of collective bargaining, mutually acceptable to both employers and employees. Once this is accomplished, the machinery by which it may be effectuated will cease to be a matter of controversy.

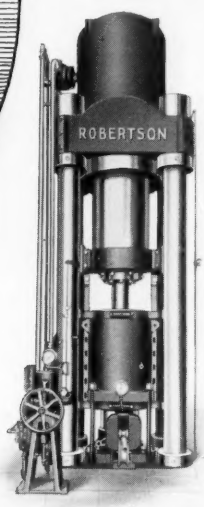
(*Please turn to page 384*)

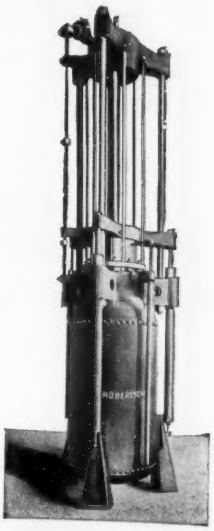
The Symbol of a Pioneer---

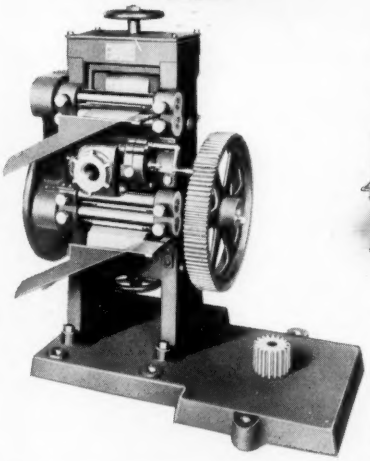
in the Design and Manufacture of HYDRAULIC MACHINERY

Seventy-six years ago, our Founder, John Robertson, became engaged in the business of designing and building Extrusion Presses, Pumps and allied Hydraulic Equipment. In fact, our Founder invented the first Lead Encasing Die Block back in 1885, and that was really the forerunner of the modern Lead Encasing Press.

Tubal Cain has always been the symbol of the John Robertson Company, and for many years John Robertson's "shop" was known as the Tubal Cain Iron Works.

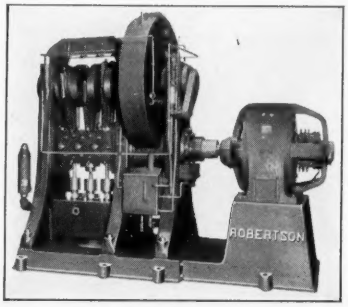






Above:
A LEAD CABLE ENCASING PRESS. We design and make all types of Extrusion Presses for Lead Cable, Lead Traps, Solder, Lead Wire, Graphite, Non-ferrous alloys, Celluloid and other Plastics.

THE ACCUMULATOR
The Robertson Hydro-Pneumatic Accumulator requires only 175 lbs. air pressure. It utilizes its air tank as a base to rest upon and may be placed on an ordinary floor, thus eliminating special foundations and requiring minimum of floor space.



Upper Left:
LEAD CABLE STRIPPING MACHINE for removing lead sheathing to remedy faults in the insulation discovered in the Testing Room. Also for removing lead sheath from rubber hose after vulcanizing or "curing".

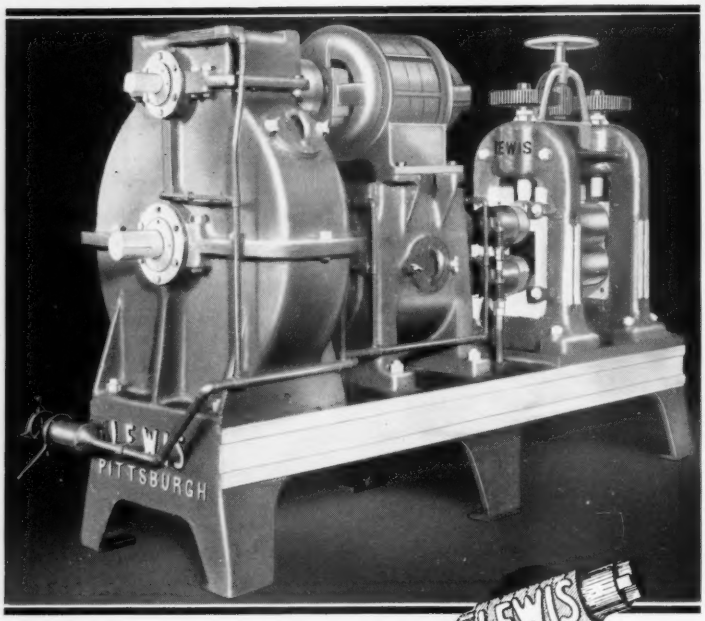
Are you receiving our little magazine, "Robertson Reminders"? If not, send us your name and address, and we'll gladly send it to you—regularly.

Left:
THE NEWLY IMPROVED ROBERTSON HYDRAULIC PUMP
Robertson Hydraulic Pressure Pumps are available for pressures from 2,000 lbs. to 6,000 lbs. per sq. inch, and from 8 to 100 gallons per minute.

John ROBERTSON CO. INC. — *Pioneers~Since 1858*

125-137 Water Street — Brooklyn, N. Y.

LEWIS WIRE FLATTENING AND NARROW STRIP MILL



Unit Construction.

Lewis Cut Herringbone Gear Reduction Unit directly connected through a flexible coupling.

Forged Steel Pinions.

Bearings are lubricated by compression grease cups.

All gears run in oil.

Neck Bearings are die cast genuine babbitt or roller bearings.

Housings have T slots for attaching coilers and guide bars.

This Mill is built in a complete unit and can be moved at any time to any desired location in the plant. The rolls may be of any quality specified by customer, including hardened steel rolls, or water cooled rolls.

• • •

LEWIS MAKES A COMPLETE LINE OF ROLLING MILL MACHINERY INCLUDING:

Mill drives up to and including 6,000 HP. Shape Straightener Machines up to and including 24 inch I beam. Motor operated Screw-Down for Mill. High Speed Gear Sets for Continuous Rod Mills. Continuous Bar and Billet Mills. Cold Mills for Sheet and Strip. Rail Breakers. Rail Re-Rolling Mills. Universal Mill Spindles. Chilled Iron and Iron Alloy Rolls for Iron, Steel, Brass, Copper, Aluminum, Zinc and Nickel. For hot Sheets, tin plate and strip—for cold sheets, tin plate and strip. For merchant bars and rods, Shears—Vertical Alligator—Cropping—Plate and Squaring. Special Machinery—Testing Machines and Iron and Steel Castings.

PITTSBURGH, PA.

LEWIS FOUNDRY & MACHINE CO.

Collective Bargaining

(*Continued from page 383*)

WE thus return to our original question, is such a definition possible? The answer is, Yes! First of all, there should be no disagreement with the proposition that in the contractual relation between employer and worker, the "bargain or agreement" is and must be a personal one. All will agree also that it creates a mutual obligation. And no one will deny that in the public interest it can be enforced. At the same time, no one should seriously question the fact that so long as the law fails to penetrate the corporate fiction, there can be no equality or freedom on the part of the worker in the negotiations leading to the accomplishment of the ultimate bargain. All labor movements have sought to redress that inequality.

✦ ✦ ✦

Summary

ONE might hastily conclude that collective bargaining is impossible, but such conclusion would be manifestly absurd. The error in such a conclusion lies in the distinction, recognized by the courts, between the "bargain" as an actionable instrument and the negotiations by means of which its provisions were determined. So long as the law regards contracts as covenants between **persons** there is no such thing as a "collective" bargain. But the law has always recognized and sustained the right of individuals to form associations and secure expert representation for the purpose of **negotiating** agreements in the interest of the individuals so associated. The corporate form of business organization is in reality nothing more. "Collective bargaining" by organized labor through "representatives of their own choosing" is nothing less.

✦ ✦ ✦

THE Recovery act conferred upon labor no right or privilege which it did not already possess, and it has deprived industry of no right to which it was ever justly

entitled. The power of workers to negotiate with industry on terms of equality has always been theirs for the taking. The labor provisions of the recovery act are no more than an expression of public sympathy for labor's difficulties. It solves no problems, it removes no issues. Labor must find for itself intelligent, upright and fearless but not belligerent leadership and through that leadership, work out its own salvation. **Labor's "New Deal" is only the "Old Deal" painted over.**

✦ ✦ ✦

Annealing With Lavite

(*Continued from page 378*)

and then several tons of copper are annealed without any power input into the furnace, lowering the furnace temperature to 1050°F.

✦ ✦ ✦

FOR an illustration of the New Annealing Method consider a plant having to anneal various amounts of stainless steel, nickel, steel and brass. The full current is turned on the furnace at four o'clock in the morning, which is the time when the demand for electricity at the plant is at its lowest. This current is held close to maximum until about seven o'clock, at which time the temperature of the furnace has increased to 2000 deg. F., or to a point suitable for annealing stainless steel. At or shortly before seven o'clock the power is turned completely off the furnace, allowing the machine peak load to be handled without any interference whatever. After the peak has subsided, that is, about 8:30, when the plant is running along with a demand some 15 per cent below the peak, a small amount of electric power is again diverted to the furnace, care being taken to keep the total well below the top peak.

✦ ✦ ✦

AT 12 o'clock, when the plant is shut down, the furnace is turned on full again until one o'clock, when the power is completely turned off the furnace to accommodate the afternoon peak. In the afternoon the general procedure is repeated.

✦ ✦ ✦

Utilizing Temperature Drop

THE temperature in the furnace gradually drops off through the day, due to the heat absorbed by the wire being annealed, but this drop is utilized by annealing, successively, materials which require lower and lower annealing temperatures. For instance, at seven o'clock approximately 100 lbs. of stainless steel wire is annealed at from 2000 deg. F. to 1850 deg. F. The furnace then cools down further to 1750 deg., when 100 lbs. of pure nickel wire is annealed between a range of 1750 deg. and 1650 deg. The furnace again cools until at 1550 deg. 200 lbs. of German silver wire is annealed.

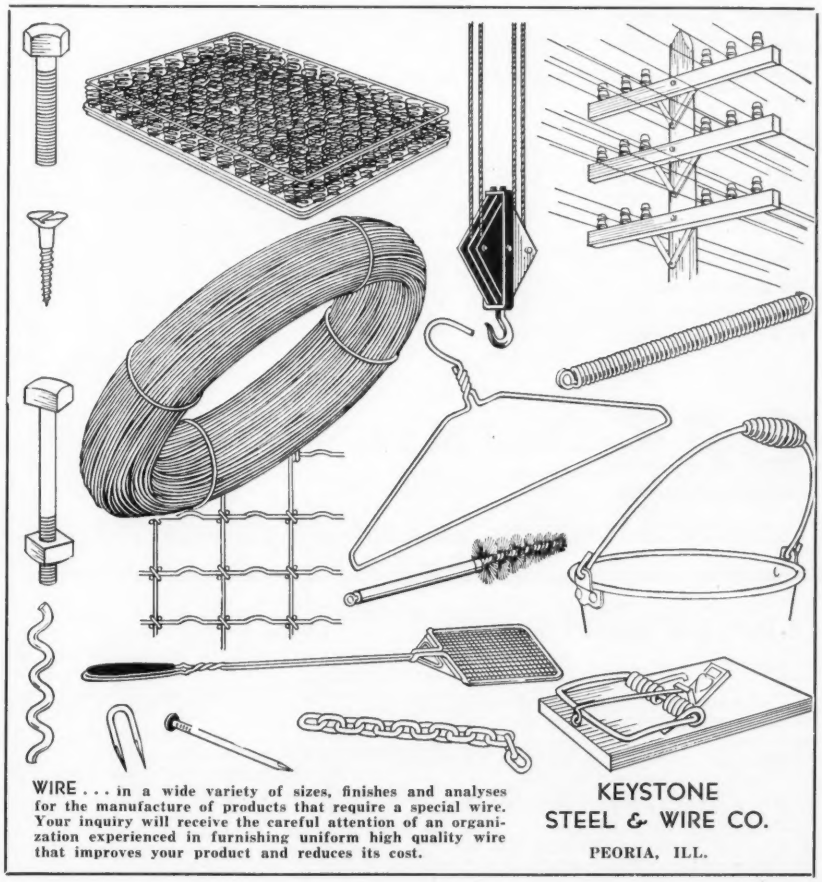
✦ ✦ ✦

THIS brings the temperature down to 1400 deg., at which point 500 lbs. of steel wire is annealed, bringing the temperature down to 1250 deg. At 1250 deg. 500 lbs. of brass and bronze are annealed in the furnace, bringing the temperature down to 1050 deg.

✦ ✦ ✦

New Type of Japanese Competition for Germany

THE German industry reports that Japanese ingenuous "inventors" have found out that names of production places well known all over the world can be suitably used for competition. A village in Japan has been christianized "Solingen" and cutlery produced there is called "Made in Solingen" after the world famous cutlery production place of Germany. A part of the docks of a suburb of Osaka has been called "Altena" and the wire packed there is now marked "Made in Altena" which is known to all wire buyers as the place where most of the German wire comes from. This imitation has never before been experienced.



WIRE . . . in a wide variety of sizes, finishes and analyses for the manufacture of products that require a special wire. Your inquiry will receive the careful attention of an organization experienced in furnishing uniform high quality wire that improves your product and reduces its cost.

KEYSTONE STEEL & WIRE CO.
PEORIA, ILL.

FOR	THE CLEANING HOUSE . . . . . HOT GALVANIZING ROOM . . . ELECTRO GALVANIZING ROOM
Hot or Cold Muriatic ● Hot or Cold Sulphuric ● Abrasion Resistance ●	**DURIRON and DURICHLOR EQUIPMENT** Centrifugal Pumps—standard and self-priming. Valves—"Y", Angle, Check, Quick Releasing, Duriron-Nordstrom lubricated. Tank Outlets—Heating Coils for Cleaning Tubs—Pipe and Fittings for Acid Handling—Acid Resisting Tank Fittings—Pickling Crates—Yokes. Will reduce costs, save time, improve results. Write for bulletins on Acid Handling Equipment. **The Duriron Company, Inc.** 442 N. FINDLAY ST. DAYTON, OHIO.

INDISPENSABLE!

THREE WIDELY USED OAK DRAWING LUBRICANTS

Super Draw No. 5
Master Draw No. K
For copper, brass and phosphor bronze.

Master Draw No. 2
For steel and alloy steel wire. Particularly adaptable to draw bench work.

Master Draw No. 425
For drawing bars and shapes, (high or low carbon) on draw benches, WITHOUT LIME COAT.

Proper drawing lubricants are as indispensable as the machines on which your products are drawn. Your lubricants should be fitted to local conditions and to the brass, bronze, steel or copper.

The Oak Chemical Products Company will be glad to assist you in the determination of the right lubricant. Your inquiry will receive prompt, careful attention without obligation to you. Write today!

OAK CHEMICAL PRODUCTS COMPANY
Bechtelsville, Pa.

LUBRICANTS FOR COLD DRAWING ANY TYPE OF METAL

A Review of Recent Wire Patents

(*Continued from page 380*)

The apparatus includes a plurality of strand coating units, each having immersion and drying chambers associated therewith.

✦ ✦ ✦

No. 1,969,720, ELECTRIC POWER CABLE, Patented August 14, 1934 by Charles E. Bennett, Hawthorne, N. J., assignor to The Okonite-Callender Cable Company, Incorporated, Paterson, N. J., a corporation of New Jersey.

The method comprises enclosing an insulated conductor in an extensible tubular casing which engages the insulation of the conductor, then introducing an insulating fluid into the cable and maintaining the same under sufficient pressure to cause the expansible casing to expand permanently a predetermined amount to provide a reservoir of uniform cross section for the insulating fluid between the walls of the casing and the insulation of the conductor.

No. 1,969,734, AUTOMATIC ARMATURE WINDING MACHINE, Patented August 14, 1934 by Harrison H. Eaton, Toledo, Ohio, assignor to The Electric Auto-Lite Company, Toledo, Ohio, a corporation of Ohio.

Including in this machine is a new type of wire guiding means specifically for the purpose of winding multipolar armatures wherein the armature coils are non-diametrically arranged.

✦ ✦ ✦

No. 1,970,406, WIRE COIL, Patented August 14, 1934 by Jacob J. Vienneau, Pittsfield, Mass., assignor to General Electric Company, a corporation of New York.

The coil comprises a number of turns of the wire arranged in a plurality of layers with a layer of insulating material between adjacent layers of the turns, this material comprising crepe paper.

✦ ✦ ✦

No. 1,970,895, WIRE TWISTING APPARATUS, Patented August 21, 1934 by Winfield S. McDaniel, Klamath Falls, Oregon.

This tool is adapted for twisting wire used in holding together form boards in concrete construction.

✦ ✦ ✦

No. 1,970,995, APPARATUS FOR WINDING WIRE ON ROTARY DRUMS, Patented August 21, 1934 by Johannes Friedrich Diehl, Herborn, Germany, assignor to Berkenhoff & Drebes A. G., Asslar, near Wetzlar-on-the-Lahn, Prussia, Germany, a joint stock company.

More particularly, the invention resides in the provision of belts having rounded surfaces to engage only portions of the wire being wound so as to reduce the danger of breakage of the wire.

✦ ✦ ✦

No. 1,970,998, COIL WINDING MACHINE. Patented August 21, 1934 by Walter Ferris, Milwaukee, Wis., assignor to The Oilgear Company, Milwaukee, Wis., a corporation of Wisconsin.

Incorporated in this machine is a device to make certain the specific number of turns of wire being wound.

Spowers Research Laboratories Organized

A DEVELOPMENT of interest to the galvanizing industry is the announcement of the formation of the Spowers Research Laboratories. This organization will concentrate on the problems of the operators of hot galvanizing plants and work constantly for an improved product and greater economies. Both chemical and mechanical experiments will be made by its highly qualified personnel.

✦ ✦ ✦

W. H. SPOWERS, JR. as a chemical and mechanical engineer needs no introduction to the galvanizing industry. His experience as a consulting engineer has long been recognized and some of the important improvements in hot galvanizing have been the result of his vision and research.

✦ ✦ ✦

AS a consulting metallurgist is the widely known Colin G. Fink, Ph.D. The reputation of Dr. Fink in the field of corrosion prevention is well known. For ten years he was research chemist for the General Electric Company; the commercial process of Chromium plating was his development; Professor of Chemistry at Columbia University, originator of Ductile Tungsten and widely known for his writings on chemical research.

✦ ✦ ✦

FREDERIC J. KENNY, Ph.D. is the chief chemist. An expert on corrosion and protection coatings, he has worked with Dr. Fink on many problems and assisted in many developments in that field. Dr. Kenny is a member of the Electro-Chemical Society on Corrosion and the American Chemical Industry. His degrees of A. M. and Ph. D. were received from Columbia University.

✦ ✦ ✦

WITH the wide knowledge and experience of the men comprising this research organization it is expected that many interesting commercial developments will result.

Learn about PARALAN

Paralan will give your finished wire and wire products protection from atmospheric corrosion in the mill and in shipping. Paralan-coated wire can be spot welded or soldered without cleaning. Also, Paralan leaves surfaces in good condition for all types of finishes—enameling, japanning, lacquering, plating, etc.

Write for further information. We may be able to solve your difficulties.

AMERICAN LANOLIN CORP.
LAWRENCE, MASSACHUSETTS

Wire Bunching Machines

NEW TYPE — HIGH SPEED
SELF CONTAINED — EASILY MOVED

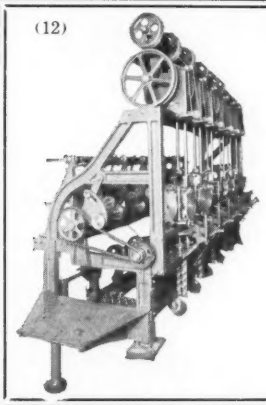
Will produce 4,500 to 36,000 feet of bunched wire per hour.
Reel capacity 350 lbs.

Write for complete information today.

New England Butt Company

DEPT. W-10 PROVIDENCE, R. I.
CHICAGO OFFICE — 20 NORTH WACKER DRIVE

(12)



Vertical Model Taping Machine

for applying 3 Tapes on each six lines of wire, for flat or round conductor, with wire straightening rolls and individual traverse for each line of wire; motor or belt drive.

EST. 1855 AIMCo INC. 1913
"American" INSULATING MACHINERY COMPANY
REG. U.S. PAT. OFF.
517 West Huntingdon St.
PHILADELPHIA PENNSYLVANIA U.S.A.

PROCEEDING AND DISCUSSIONS OF THE 1934 WIRE ASSOCIATION MEETINGS

Price $5.00 Per Copy

LIMITED EDITION
ORDER YOUR COPY NOW

THE WIRE ASSOCIATION
17 E. 42nd St., New York, N. Y.

BALLOFFET

The Quality Diamond Dies

1870 1934

BALLOFFET DIAMOND WIRE DIES CO. INC.,
13-15 East 22nd Street, New York City
Factories in France: Lagnieu-Cluses-Trevoux

BISCO

TUNGSTEN CARBIDE DIES
FOR
WIRE, ROD and TUBING

BARE NIBS—SEMI-FINISHED—FINISHED
ROUND AND SPECIAL SHAPES

THE BISSETT STEEL COMPANY
CLEVELAND
WORCESTER PHILADELPHIA CINCINNATI

Patents—Trade Marks

Before disclosing your inventions to anyone send for blank form "Evidence of Conception" and instructions "How to Establish Your Rights".

All cases submitted given personal attention by members of the firm. Information and booklet free.

Lancaster, Allwine & Rommel

PATENT LAW OFFICES

Suite 438, Bowen Building 815-15th St., N.W. Washington, D. C.

VIANNEY

DIAMOND DIES

LIGHT WEIGHT DIES
STANDARD WEIGHT DIES } GUARANTEED WEIGHTS

8000 stones in N. Y. stock for immediate delivery.

250 EAST 43rd ST. NEW YORK

Exports And Imports

(*Continued from page 379*)

$1,349; Philippine Islands 2,430 gross, valued at $321.

✦ ✦ ✦

EXPORTS of brass wood screws during same period totaled 4,451 gross, valued at $1,491. Of this amount Cuba took 1,114 gross, valued at $466; Brazil 680 gross, valued at $106; Canada 519 gross, valued at $268; Philippine Islands 495 gross, valued at $98; Mexico 462 gross, valued at $129.

✦ ✦ ✦

IMPORTS of wood screws during same period totaled 18,915 gross, valued at $2,103 of which Sweden gave 18,915 gross, valued at $2,103.

✦ ✦ ✦

EXPORTS of iron and steel wood screws during July, 1934 totaled 62,308 gross, valued at $5,704. Of this total China took 25,000 gross, valued at $1,186; Cuba 18,533 gross, valued at $2,294; Japan 5,900 gross, valued at $523; Mexico 2,708 gross, valued at $284; Colombia 9,129 gross, valued at $1,349; Philippine Islands 2,430 gross, valued at $212; Chile, 2,288 gross, valued at $321.

✦ ✦ ✦

EXPORTS of iron and steel wood during same period totaled 8,323 gross, valued at $2,342. Of this amount United Kingdom took 3,702 gross, valued at $740; Cuba 2,941 gross, valued at $1,047; Honduras 397 gross, valued at $136; Costa Rica 224 gross, valued at $34.

✦ ✦ ✦

IMPORTS of wood screws during same period totaled 6,425 gross, valued at $1,003 of which Sweden gave 5,550 gross, valued at $568.

✦ ✦ ✦

Large Cable For Holland

WHAT is claimed to be the biggest cable ever produced is now being supplied by the Felten & Guilleaume work of Koln to Holland for the Rhine crossings at Nymwegan. The cable is 12,600 m long and has a total diameter of 14.5 cm. It consists of three strands, each 240 mm surface. The cable weighs 52.5 tons per 1,000 metres, and is suitable for a capaccity of 58,888 kva at 65,000 Volts tension.

Anaconda Sales Co. Expands

ANACONDA Sales Co., a 100% owned subsidiary of Anaconda Copper Mining Co., has, in addition to the products previously marketed by it, taken over the sale of all metals and metal products producer by Anaconda Copper Mining Co. and its subsidiary companies, which were heretofore sold by United Metals Selling Co., also a 100% owned subsidiary.

✦ ✦ ✦

BY this change the sales of all metals and metal products of the Anaconda group will be sold under the Anaconda trade name. The fabricated products manufactured by American Brass Co. and Anaconda Wire and Cable Co. will be sold by those companies.

✦ ✦ ✦

R. G. Martin Elected President Electric Auto-Lite Co.

ROYCE G. MARTIN, president of the Moto-Meter Gauge & Equipment Company, has been elected president of the Electric Auto-Lite Company, succeeding Clement O. Miniger, who was named chairman of the board.

✦ ✦ ✦

MR. MINIGER has been president of the company since 1914. Mr. Martin has been an Auto-Lite vice-president. Plans for a merger of Auto-Lite and Moto-Meter have been approved by both firms, but they still retain their corporate identity.

✦ ✦ ✦

Republic Appoints R. S. Archer Chief Metallurgist at Chicago

ACCORDING to an announcement by Earl C. Smith, chief metallurgist of Republic, R. S. Archer has joined the Republic Steel Co., as Chicago Metallurgist.

✦ ✦ ✦

MR. Archer has been director of metallurgy of the A. O. Smith Corp., Milwaukee, and prior to that was in charge of the Cleveland section of the research laboratories of the Aluminum Co. of America.

Rea Magnet Wire Co., Inc. Amends Charter

THE Rea Magnet Wire Co., Inc,, has filed amended articles of incorporation. The amended articles provide for 11,400 shares of authorized capital stock. Nine hundred shares are to have par value of $100 each, totaling $90,000, and 10,500 shares are to have no par value. Victor F. Rea is president and Jay F. Boeshore, secretary of the company.

✦ ✦ ✦

Fidelity Machine Co. Opens Export Office

THE Fidelity Machine Company has recently opened an export office at 25 Beaver Street, New York City.

✦ ✦ ✦

MR. T. J. TIGHE, for many years affiliated with the exporting field, has been appointed resident manager of this department.

Camden Wire Co. Plans to Rebuild

THE Camden Wire Company plans to rebuild part of plant recently destroyed by fire at a loss of about $50,000 with equipment. The company manufactures electric cables, wires, etc.

✦ ✦ ✦

Philip E. French

FOR many years secretary of the Driscoll Wire Company, Shelton, Conn., passed away Aug. 5, 1934.

Leaky Pickling Tanks?

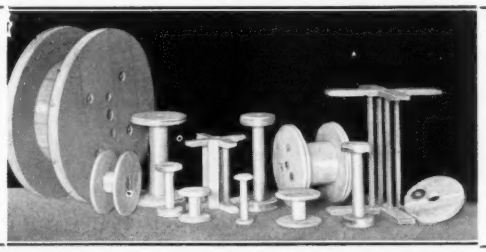
CEILCOTE is the only reliable acid-proof tank lining; originated by us and protected by United States and Foreign Patents.

In use for years by leading steel plants and allied industries throughout this country, Canada and Europe.

Complete specifications and blue prints are furnished, enabling you to secure a faultless job.

THE GEILCOTE COMPANY
Rockefeller Bldg., Cleveland, Ohio

WOODEN SPOOLS REELS and BOBBINS For WIRE and CORDAGE MILLS



WRITE FOR PRICES

✦ ✦ ✦

AVOCA MFG. CO.
AVOCA, N.Y.

EFFICIENT PICKLING
REQUIRES "RODINE"

RODINE, SAVES ACID AND METAL
Prevents over-pickling. Minimizes acid brittleness and acid fumes.

Samples and Directions sent on request.

AMERICAN CHEMICAL PAINT CO.
AMBLER, PA.

Detroit Office & Warehouse 6339 Palmer Ave.; E.

TESTED---
---APPROVED
---ADOPTED
"NEP"
100% INHIBITORS
The Wm. M. Parkin Co.
PITTSBURGH, PA.
In Steel Since 1860

New HOTEL EDISON
47th ST.
JUST WEST of B'WAY
NEW YORK

1000 ROOMS
EACH WITH BATH AND SHOWER
Circulating Ice Water . . . Radio . . .
Large Closets . . . Full Length Mirrors

OTHER UNUSUAL FEATURES
SUN-RAY HEALTH LAMPS
Roof Solarium . . . Air-Cooled Restaurant

ROOMS from $2.50 SUITES from $6.00
IN THE HEART OF TIMES SQUARE

PAPER CABLE FILLER
FOLDED PAPER FLATS
PAPER INSULATION YARNS
E. W. TWITCHELL, INC.
Formerly National Patent Reed Co.
3rd & Somerset Sts. Phila., Pa.

Broden Construction Co.
Wire Mill and Cold Rolling Equipment
10255 Harvard Ave.
CLEVELAND, OHIO

Continuous Straightening and Cutting Machinery
With
FLYING SHEAR
for round and shaped wire.
✦ ✦ ✦
THE HALLDEN MACHINE COMPANY
THOMASTON CONNECTICUT

WIRE MILL EQUIPMENT
MORGAN CONSTRUCTION CO.
WORCESTER, MASS.

RUESCH
Machinery For
Wire, Tube, And Brass Mills
409 Mulberry St., Newark, N. J.

Kenneth B. Lewis
CONSULTING ENGINEER
Wire Mill Equipment, Layout and Practice
17 East 42nd St. New York City
Phone: Murray Hill 2-4188
43 Midland St. Worcester, Mass.
Phone 5-6033

ZINC WIRE
THE PLATT BROS. & CO.
WATERBURY, CONN.

Wire Machinery Industry Code Authority

THE Code Authority of the Wire Machinery Industry under Basic Code No 347, Supplement No 5, is composed of the Executive Committee of the Wire Machinery Builders Association as follows:

Chairman, Mr. Philip M. Morgan,
Morgan Construction Co.
Worcester, Mass.
Vice-Chairman, Mr. L. A. Vaughn,
Vaughn Machinery Co.
Cuyahoga Falls, Ohio.
Sec. and Treas., Mr. G. D. Hartley,
Sleeper & Hartley, Inc.
Worcester, Mass.
Mr. E. F. Shuster,
F. B. Shuster Co.,
New Haven, Conn.
Mr. H. G. Wells,
Frank L. Wells Co.,
Kenosha, Wisconsin.
Mr. W. D. Pierson,
Watherbury Farrel Foundry & Machine Co.,
Waterbury, Conn.

✦ ✦ ✦

MR. F. E. BARTH of the Braton & Knight Mfg. Co., Worcester, Mass., is Administration representative for The Code Authority.

✦ ✦ ✦

'Round The World With The Wire Industry

(*Continued from page 381*)

try, which has quoted only in SWG sizes during the past years, is now also returning to the BWG gauge and says that the industry has had many controversies and disputes by quoting SWG (Standard wire gauge) figures to customers who took these sizes as BWG and were sending claims later on that wrong sizes had been shipped.

✦ ✦ ✦

IWECO Report for August

THE last report of the IWECO states that the export business remained low during August. The German industry however has been able to sign more barter trade agreements; the last agreement being with Guatemala by which the latter agrees to import almost all her wire product requirements from Germany against greater shipments of coffee.

WIRE DRAWING MACHINERY AND EQUIPMENT
Rod Frames—16" Frames, 8" Frames —Take-Up Frames, Wire Pointers—Puller Tongs.
General Castings for Wire Mill use.
Circulars on Request.
E. J. Scudder Foundry & Machine Co.
Trenton, N. J.

HIGH SPEED
Welding Wire Straightening and Cutting Machinery
Round Wire Straightening and Cutting Machinery
Flat Wire Straightening and Cutting Machinery
Roll and Rotary Wire Straighteners
THE F. B. SHUSTER CO.
New Haven, Conn.
Straightener Specialists Since 1866

JOHN ROYLE & SONS
PATERSON, NEW JERSEY.
MAKERS OF EXTRUDING MACHINES FOR COVERING ELECTRIC CONDUCTORS AND WELDING WIRE

Wire Mill Equipment, Stranding, Insulating, Drawing, Welding
Thomson-Judd Wire Machinery Co.
Subsidiary of
Thomson-Gibb Electric Welding Co.
Lynn, Massachusetts.

W. H. Spowers, Jr.
Consulting Engineer
551 Fifth Ave., N. Y. C.
Specializing in Galvanizing Plants Designed and Installed
Practical Engineering
Vanderbilt 3-7395 Advice

Wire Drawing Diamond Dies
COCHAUD
WIRE DIE CORPORATION
300 W. 56th ST., NEW YORK
Tel. Col. 5-1340

BUYERS' GUIDE

For more complete information, consult the annual Directory, Index & Buyers' Guide.

ANNEALING FURNACES
See Furnaces—Various Headings

ANNEALING POTS AND BOXES
Scudder, E. J., Fdry & Machine Co., Trenton, N. J.

ARMORING EQUIPMENT
Amer. Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Watson Machine Co., Paterson, N. J.

BAKERS
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

CASTINGS—Wire Mill
E. J. Scudder Foundry & Machine Co., Trenton, N. J.

CHEMICALS—Cleaning
American Chemical Paint Co., Ambler, Pa.
Delany Chemical Co., Tacony Station, Philadelphia, Pa.
Grasseli Chemical Co., Cleveland, O.

CLEANING & PICKLING EQUIPMENT
Broden Construction Co., Cleveland, O.
Duriron Co., The, Dayton, O.
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

COATING—Protective
American Lanolin Corp., Lawrence, Mass.

COILERS—Sheet Wire
H. J. Ruesch Machine Co., Newark, N. J.

CRANES—Wire Mill
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

DIES—Diamond
Balloffet Diamond Wire Dies Co., Inc., N. Y. C.
Cochaud Wire Die Co., New York.
Driver-Harris Co., Harrison, N. J.
Kelly Wire Die Corp., New York, N. Y.
Vianney Wire Die Works, New York.

DIES—Lead Extrusion
John Robertson Co., Brooklyn, N. Y.

DIES—Repairs & Re-Cutting
Cochaud Wire Die Corp., New York.
Driver-Harris Co., Harrison, N. J.
Firth-Sterling Steel Co., McKeesport, Pa.
Kelly Wire Die Corp., New York, N. Y.
Vianney Wire Die Wks., N. Y.

DIES—Rod and Tube Drawing
Bissett Steel Co., Cleveland, O.
Carboloy Co., Inc., Newark, N. J.
Firth-Sterling Steel Co., McKeesport, Pa.
Kelly Wire Die Corp., New York, N. Y.
Vianney Wire Die Works, New York, N. Y.

DIES—Tantalum Carbide
Bissett Steel Co., Cleveland, O.
Kelly Wire Die Corp., New York, N. Y.
Vianney Wire Die Works, New York, N. Y.

DIES—Tungsten Carbide
Bissett Steel Co., Cleveland, O.
Carboloy Co., Inc., Newark, N. J.
Driver-Harris Co., Harrison, N. J.
Firth-Sterling Steel Co., McKeesport, Pa.
Kelly Wire Die Corp., New York, N. Y.
Vianney Wire Die Works, New York, N. Y.

DRAW BENCHES
H. J. Ruesch Machine Co., Newark, N. J.
Scudder, E. J., Fdry. & Machine Co., Trenton, N. J.
Vaughn Machinery Co., Cuyahoga Falls, O.

ENGINEER—Consulting Wire Mill
Lewis, Kenneth B., New York, N. Y.

EYELETS—Brass or Zinc
Platt Bros. & Co., The, Waterbury, Conn.

FILLERS—Paper for Cable
E. W. Twitchell, Inc., Phila., Pa.

FURNACES—Annealing
Bellis Heat Treating Co., Branford, Conn.
Electric Furnace Co., Salem, O.

FURNACES—Automatic
Electric Furnace Co., Salem, O.

FURNACES—Bright Annealing
Bellis Heat Treating Co., Branford, Conn.
Electric Furnace Co., Salem, O.

FURNACES—Electric
Bellis Heat Treating Co., Branford, Conn.
Electric Furnace Co., Salem, O.

FURNACES—Lead Melting
Electric Furnace Co., Salem, O.
John Robertson Co., Brooklyn, N. Y.

FURNACES—Non-Oxidizing
Bellis Heat Treating Co., Branford, Conn.
Electric Furnace Co., Salem, O.

FURNACES—Wire, Strip and Sheet
Bellis Heat Treating Co., Branford, Conn.
Electric Furnace Co., Salem, O.

GALVANIZING ENGINEERS
Spowers Research Laboratories, New York, N. Y.

INHIBITORS
American Chemical Paint Co., Ambler, Pa.
Delany Chemical Co., Tacony Station, Philadelphia, Pa.
Grasseli Chemical Co., Cleveland, O.
Wm. M. Parkin & Co., Pittsburgh, Pa.

INSULATION—Cable or Cable Filler
E. W. Twitchell, Inc., Phila., Pa.

LATHES—Die Reaming
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

LIME—Pulverized
Amer. Lime & Stone Co., Bellefonte, Pa.

LUBRICANTS—Wire Drawing
R. H. Miller Co., Homer, N. Y.
Oak Chemical Co., Bechtelsville, Pa.

MACHINERY—Armoring (Cable, Wire Hose)
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
John Robertson Co., Brooklyn, N. Y.
Sleeper & Hartley, Inc., Worcester, Mass.
Thomson-Gibb Electric Welding Co., Lynn, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Braiding
New England Butt. Co., Providence, R. I.
Textile Machine Works, Reading, Pa.
Watson Machine Co., Paterson, N. J.

MACHINERY—Brazing
Thomson-Judd Wire Machinery Co., Lynn, Mass.

MACHINERY—Bunching
Amer. Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Bundling, Scrap
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.
Watson Machine Co., Paterson, N. J.

MACHINERY—Cable, Electric
American Insulating Machinery Co., Philadelphia, Pa.
New England Butt Co., Providence, R. I.
Thomson-Gibb Electric Welding Co., Lynn, Mass.
Watson Machine Company, Paterson, N. J.

MACHINERY—Chain Making
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Closing
New England Butt Co., Providence, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Coil Winding
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Coilers
Broden Const. Co., Cleveland, O.
H. J. Ruesch Machine Co., Newark, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Copper Wire Drawing and Rolling
H. J. Ruesch Machine Co., Newark, N. J.
Vaughn Machinery Co., Cuyahoga Falls, O.

PROCEEDING AND DISCUSSIONS

OF THE 1934

WIRE ASSOCIATION MEETINGS

Price $5.00 Per Copy

LIMITED EDITION

ORDER YOUR COPY NOW

THE WIRE ASSOCIATION

17 E. 42nd St., New York, N. Y.

BUYERS' GUIDE, Continued

MACHINERY—Cutting
Broden Construction Co., Cleveland, O.
Hallden Machine Co., Thomaston, Conn.
F. B. Shuster Co., New Haven, Conn.
Sleeper & Hartley, Worcester, Mass.

MACHINERY—Enameling
American Insulating Mach'y Co., Phila., Pa.

MACHINERY—Extruding
John Robertson Co., Brooklyn, N. Y.
John Royle & Sons, Paterson, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Flat Wire
Broden Construction Co., Cleveland, O.
H. J. Ruesch Machine Co., Newark, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Forming
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Galvanizing Wire
Broden Construction Co., Cleveland, O.
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Gang Winders
H. J. Ruesch Machine Co., Newark, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Insulating
American Insulating Machinery Co., Phila.
Jenny, R. Harry, New Haven, Conn.
New England Butt Co., Providence, R. I.
John Royle & Sons, Paterson, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Lead Encasing Presses, etc.
John Robertson Co., Brooklyn, N. Y.

MACHINERY—Lead Stripping
John Robertson Co., Brooklyn, N. Y.
Watson Machine Co., Paterson, N. J.

MACHINERY—Lock Washer
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Magnet Wire
American Insulating Mach'y Co., Phila., Pa.
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Measuring Wire & Cable
New England Butt Co., Providence, R. I.
Watson Machine Co., Paterson, N. J.

MACHINERY—Nail
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Panning
American Insulating Machinery Co., Phila.

MACHINERY—Pointing
Broden Construction Co., Cleveland, O.
H. J. Ruesch Machine Co., Newark, N. J.
E. J. Scudder Foundry & Machine Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Rod Mill
Broden Construction Co., Cleveland, O.
Morgan Const. Co., Worcester, Mass.
H. J. Ruesch Machine Co., Newark, N. J.
Lewis F'dry & Machine Co., Pittsburgh, Pa.

MACHINERY—Rolling Mill
Broden Construction Co., Cleveland, O.
Lewis F'dry & Machine Co., Pittsburgh, Pa.
Morgan Construction Co., Worcester, Mass.
H. J. Ruesch Machine Co., Newark, N. J.

MACHINERY—Rubber Strip Covering
New England Butt Co., Providence, R. I.
John Royle & Sons, Paterson, N. J.
Watson Machine Co., Paterson, N. J.

MACHINERY—Rubber Tubing and Straining
John Royle & Sons, Paterson, N. J.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Screw Wire
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Special
American Insulating Mach'y Co., Phila. Pa.
Broden Construction Co., Cleveland, O.
H. J. Ruesch Machine Co., Newark, N. J.
E. J. Scudder Foundry and Machine Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Spooling
American Insulating Machinery Co., Phila.
Vaughn Machinery Co., Cuyahoga Falls, O.
Watson Machine Co., Paterson, N. J.

MACHINERY—Spring Making
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Staple
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Straightening
Broden Construction Co., Cleveland, O.
Hallden Machine Co., Thomaston, Conn.
H. J. Ruesch Machine Co., Newark, N. J.
F. B. Shuster, New Haven, Conn.
Sleeper & Hartley, Inc., Worcester, Mass.

MACHINERY—Stranding
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Thomson-Judd Wire Machinery Co., Lynn, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Strip Steel
Broden Const. Co., Cleveland, O.
Lewis F'dry & Machine Co., Pittsburgh, Pa.
H. J. Ruesch Machine Co., Newark, N. J.

MACHINERY—Swaging
H. J. Ruesch Machine Co., Newark, N. J.
Sleeper & Hartley, Worcester, Mass.

MACHINERY—Taping
Amer. Insulating Mach. Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Thomson-Judd Wire Machinery Co., Lynn, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Tinsel Rolling Mills
Amer. Insulating Mach'y Co., Phila., Pa.

MACHINERY—Trolley Wire
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Tube Mill
H. J. Ruesch Machine Co., Newark, N. J.

MACHINERY—Welding Wire
Micro Products Co., Chicago, Ill.
F. B. Shuster Co., New Haven, Conn.
Thomson-Judd Wire Machinery Co., Lynn, Mass.

MACHINERY—Winding
American Insulating Mach'y Co., Phila., Pa.
New England Butt Co., Providence, R. I.
Sleeper & Hartley, Inc., Worcester, Mass.
Watson Machine Co., Paterson, N. J.

MACHINERY—Wire Drawing
American Insulating Machinery Co., Phila.
Broden Const. Co., Cleveland, Ohio.
Morgan Construction Co., Worcester, Mass.
H. J. Ruesch Machine Co., Newark, N. J.
E. J. Scudder Foundry & Machine Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.
Thomson-Judd Wire Machinery Co., Lynn, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

MACHINERY—Wire Rope
New England Butt Co., Providence, R. I.
Thomson-Judd Wire Machinery Co., Lynn, Mass.
Watson Machine Company, Paterson, N. J.

MACHINERY—Wire Tinning
American Insulating Mach'y Co., Phila., Pa.

PAPER—Insulating
E. W. Twitchell, Inc., Phila., Pa.

PICKLING COMPOUNDS—
American Chemical Paint Co., Ambler, Pa.
Delany Chemical Co., Tacony Station, Philadelphia, Pa.
Grasselli Chemical Co., Cleveland, O.
Wm. M. Parkin & Co., Pittsburgh, Pa.

POTS—Lead Melting
John Robertson Co., Brooklyn, N. Y.

PRESSES—Lead Encasing
John Robertson Co., Brooklyn, N. Y.

PRESSES—Lead Extrusion
John Robertson Co., Brooklyn, N. Y.

PULLERS—Wire
E. J. Scudder Fdry. & Machine Co., Trenton, N. J.
Sleeper & Hartley, Inc., Worcester, Mass.

PUMPS—Hydraulic
John Robertson Co., Brooklyn, N. Y.

REELS AND SPOOLS—All Kinds
Avoca Mfg. Co., Avoca, N. Y.

REEL AND TENSION STAND—
Sleeper & Hartley, Inc., Worcester, Mass.

REEL CRUTCHES
Watson Machine Co., Paterson, N. J.

ROLLING MILLS—See Machinery—Rolling Mill

ROLLS—
Lewis F'dry & Machine Co., Pittsburgh, Pa.

RUST PROOF COMPOUND
American Lanolin Co., Lawrence, Mass.

SOAPS—Wire Drawing
R. H. Miller Co., Homer, N. Y.
Oak Chemical Co., Beckleisville, Pa.

SPOOLS
Avoca Mfg. Co., Avoca, N. Y.

STRIP—Brass, Zinc and Non Ferrous
Platt Bros. & Co., The, Waterbury, Conn.

TANKS—Compound
Watson Machine Co., Paterson, N. J.

TRUCKS
Morgan Construction Co., Worcester, Mass.
Vaughn Machinery Co., Cuyahoga Falls, O.

TUBE BENDERS AND FORMERS
H. J. Ruesch Machine Co., Newark, N. J.

VALVES AND FITTINGS—Acid Proof
Duriron Co., The, Dayton, O.

VULCANIZERS
John Royle & Sons, Paterson, N. J.
Watson Machine Co., Paterson, N. J.

VULCANIZING PANS
American Insulating Mach'y Co., Phila., Pa.

WIRE—Manufacturers
Keystone Steel & Wire Co., Peoria, Ill.

WIRE—Nickel Silver and Phosphor Bronze
Seymour Mfg. Co., Seymour, Conn.

WIRE—Non Ferrous to Specification
Seymour Mfg. Co., Seymour, Conn.

WIRE—Steel—Also Coppered Steel—Also Galvanized Steel
Keystone Steel & Wire Co., Peoria, Ill.

WIRE AND STRIP—Brass, Zinc
Platt Bros. & Co., The, Waterbury, Conn.

This is a carefully classified index of concerns who specialize in this industry and who advertise regularly in WIRE & WIRE PRODUCTS. Please mention WIRE when writing to these firms.

THE WATSON MACHINE COMPANY

ESTABLISHED 1845

PATERSON, NEW JERSEY, U. S. A.

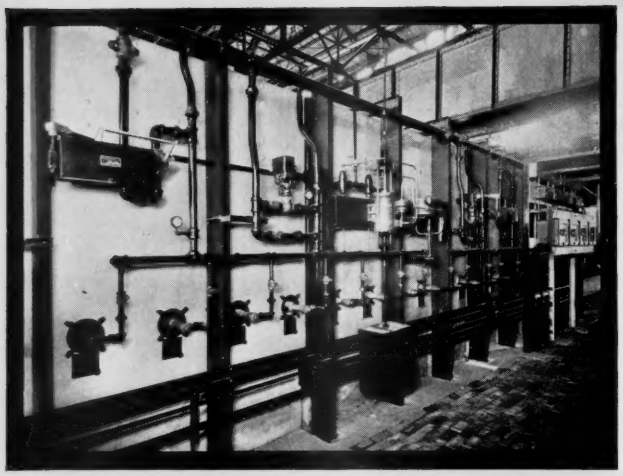
Electric Cable and Wire Rope Machinery:

STRANDERS	Planetary & Rigid Frame types (*horizontal and vertical.*) High-Speed Tubular and Built-up types.
BUNCHERS	High-speed types for spools up to 1500 lb. capacity.
ARMORING MACHINES	For Wire (*planetary type*) and for Tape.
PAIRING & TRIPLING MACHINES	For Bare & Insulated Wire.
CLOSERS	For Wire in Planetary, High-speed & Angular types.
CLOSERS & CABLERS	For electric cable in Planetary and Angular types.
TAPING MACHINES	Eccentric and Concentric types, for Paper, Friction and Varnished Cambric and Burlap types.
TAPING HEADS	For applying steel tape in Eccentric and Concentric high-speed types.
JUTE & BURLAP	Applying Heads.
THREAD SERVERS	For Cotton, Asbestos, etc. application on hose and wire.
COMPOUND TANKS	Electrical or Steam heated for machine or unit application.
CHALK APPLIERS	Wet and Dry types.
CAPSTAN SECTIONS	With Single tapered and double grooved wheels, with Lay Control by gears or variable speed transmission.
LET OFF REEL STANDS	Shaft and Shaftless types, for any size of reels.
WINDERS	For steel and copper, in single or multiple head units.
COILING MACHINES	Power or manual drive for package coiling—also for warehouse and shipping room use.
COILING HEADS	For wire rope and insulated wire and cable.
TAKEUP STANDS	Inclined frame, Shaftless and Heavy-duty types.
TRAVERSES	Light and Heavy, manual, mechanical and motorized.
TEMPERING & GALVANIZING MULTIPLE HEAD TAKEUPS	For wire.
MEASURING MACHINES	For Length Measurement.
ELECTRIC PATCH VULCANIZERS	
SATURATING, WAXING & GREASING TANKS	Gas fired and Electrical.
WIRE TINNING MACHINES	Gas fired and Electrical.
CABLE PEELERS	For removing lead sheathing and insulation.
POLISHING HEADS	Separately or Motor driven.
REEL CRUTCHES	For turning heavy reels in handling and shipment.
MOTORIZED WINCHES	For general duty in cable and rope plants.
CUTTERS	For wire rope, cable and chain.
SPOOLS	Heavy-duty for Rope-Mills and Cable-plants.

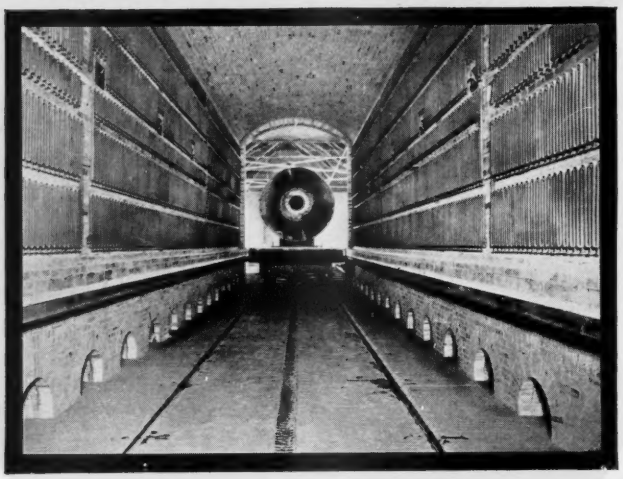
Send for descriptive catalogue.

ELECTRICAL WIRE AND CABLE—WIRE ROPE AND CORDAGE MACHINERY

FURNACES



FOR OIL, GAS OR ELECTRIC HEAT



We build the furnace to fit the job.

Ask for printed matter showing furnaces we have built for handling wire and wire products.

No job too large or too unusual

THE ELECTRIC FURNACE CO.

SALEM, OHIO.

FUEL FIRED FURNACES

ELECTRIC FURNACES